Remixing Transmedia for Cultural Heritage Sites: The Rhetoric, Creative Practice, and Evaluation of Digital Narratives

Nicole Basaraba

Doctor of Philosophy, Digital Humanities
School of Languages, Literatures, and Cultural Studies*
Trinity College Dublin, Ireland

Submitted: May 29, 2020

Supervised by:
Peter Arnds, Associate Professor, Comparative Literature;
Jennifer Edmond, Associate Professor, Long Room Hub; and
Owen Conlan, Associate Professor, Computer Science and Statistics,
Trinity College Dublin, Ireland

Examined on 29 September 2020 by:
Linda Doyle, Vice President for Research and Prof. of Engineering and the Arts, Trinity College Dublin, Ireland
Anders Fagerjord, Head of Department, Linguistic, Literary and Aesthetic Studies, University of Bergen, Norway

*This research was supported by a scholarship from the ADAPT Centre.
Declaration

I declare that this thesis has not been submitted as an exercise for a degree at this or any other university and it is entirely my own work.

I agree to deposit this thesis in the University’s open access institutional repository or allow the library to do so on my behalf, subject to Irish Copyright Legislation and Trinity College Library conditions of use and acknowledgement.

Nicole Basaraba
Signature (May 29, 2020)
Acknowledgements

Firstly, I express my sincere gratitude to my three supervisors, Peter Arnds, Jennifer Edmond and Owen Conlan, who were daring enough to take on my proposed transdisciplinary PhD project. Each of you added such value and your areas of expertise influenced how this dissertation came together. Your continued support and ability to fit in regular team meetings made all the difference. I felt fortunate to have had three supervisors when many only get one.

I would like to thank the ADAPT Centre for funding my research and all my supportive colleagues and friends who helped me through the PhD administratively, intellectually and emotionally. The continual moral support and positive environment was a saving grace for all of us, especially in the face of the tragic passing of Séamus Lawless and the turmoil of the COVID-19 pandemic.

Thank you to everyone that I met at the conferences and maintained contact with to exchange our mutual research interests and methodologies. The presentations and email exchanges provided some key insights for my thesis. Thanks go to the QUT Summer School instructors and fellow attendees who offered their expertise, advice and assisted with disseminating and participating in my iDoc experiment. A special thank you to the selected experts, many of whom I had never met, who went out of their way to give their time to provide feedback on my iDoc.

Finally, thank you to my family for learning the term Digital Humanities and who deserve extra kudos for being able to recite a rather excellent elevator pitch of my PhD research.
Abstract

In the digital age, cultural heritage tourists need to invest a lot of time and cognitive effort into hunting and gathering cross-media content about a destination and then connecting it into a cohesive sense of a place. This thesis uses the guideposts of narrative and the affordances digital media to inform the creation of narrative experiences that provide people with the agency to make meaningful content choices tailored to their interests. In the context of tourism, the aim was to develop a choose-your-own-adventure virtual tour that met the needs of an audience that is primarily interested in cultural heritage activities. This thesis’ transdisciplinary approach applied theories and practices from communication and media studies, literary studies, computer science, and digital humanities to the investigation of interactive digital narratives (IDN)—a term used by scholars across disciplines to describe emerging genres of digital storytelling. The research question this thesis addresses is: how can a transdisciplinary approach expand IDN theory into a framework that can be applied to create and evaluate multimodal, participatory narratives in non-fiction genres?

A theoretical framework for creating persuasive digital narratives was developed and demonstrated in practice through a case study on the 11 UNESCO World Heritage Australian Convict Sites. A mixed-methods approach of gathering qualitative and quantitative data was used for a comparative analysis to determine which narrative themes and content modalities were of most interest to visitors of these sites. A prototype interactive web documentary (iDoc) was created based on a multimodal discourse analysis of content produced by the tourism industry, subject-matter experts, and users (i.e., members of the public). A combination of content collected from the three corpora was remixed into a new narrative system, which was based on the developed theoretical framework and tested by experts and users. The survey results showed that video and image modalities were preferred, the alternative paths provided through the narrative structure were selected more often than the linear option, and the rhetorical communication goal of persuading future participation was achieved. Future IDNs could help preserve local history, uncover lost cultural stories and customs, allow people to explore their own and other cultures, serve as a method of informal education, and encourage public participation in cultural formation and dialogues.

Keywords: interactive digital narrative, digital rhetoric, narratology, non-fiction, cultural heritage, tourism, new media, multimodality, Australian convicts
# Table of Contents

DECLARATION ........................................................................................................... 1
ACKNOWLEDGEMENTS ............................................................................................ 2
ABSTRACT ..................................................................................................................... 3
TABLE OF CONTENTS ............................................................................................... 4
LIST OF FIGURES ....................................................................................................... 7
LIST OF TABLES ........................................................................................................... 8
LIST OF IMAGES ......................................................................................................... 9
GLOSSARY ................................................................................................................... 10
ACRONYMS .................................................................................................................. 14

## CHAPTER 1: INTRODUCTION ................................................................................. 15
1.1 Anecdote ............................................................................................................... 15
1.2 Media Divergence, Multiple Narratives, and Information Overload .................... 15
1.3 Narrative Across Media ....................................................................................... 19
1.4 Interactive Digital Narratives versus Digital Storytelling .................................. 20
1.5 Non-fiction Narrative Focus: Cultural Heritage .................................................. 23
1.6 Research Question & Hypotheses ........................................................................ 27
    1.6.1 Case Study Rationale: 11 UNESCO World Heritage Australian Convict Sites 28
1.7 Research Objectives ............................................................................................. 30
1.8 Thesis Overview .................................................................................................... 31

## CHAPTER 2: NARRATIVES IN DIGITAL MEDIA ................................................... 32
2.1 Remediation in Digital Narratives ....................................................................... 32
    2.1.1 Immersion and Interactivity in Digital Media ............................................. 35
2.2 The Evolving Study of Narrative ....................................................................... 37
    2.2.1 Narratology versus Ludology ...................................................................... 40
    2.2.2 A Ludonarrative Toolkit .............................................................................. 45
2.3 The Evolution of Complexity in Interactive Digital Narrative Genres ................. 49
    2.3.1 Interactive Fiction ....................................................................................... 51
    2.3.2 Transmedia Storytelling .............................................................................. 54
    2.3.3 Alternate Reality Games (ARGs) ................................................................ 59
2.4 Gap in Non-fiction Interactive Narrative Studies ............................................... 62
    2.4.1 Interactive Documentary (iDocs) ................................................................. 64
2.5 Non-fiction Focus: Narrativizing Cultural Heritage ............................................. 68
    2.5.1 Immersive and Virtual Museums ................................................................. 70
    2.5.2 Serious Games, Gamification, and Mobile Apps ......................................... 73
    2.5.3 Participatory Digital Humanities Projects ................................................ 76
    2.5.4 Interactive Documentaries for Location-based Heritage ............................... 78
2.6 Summary of Digital Narrative Genres ................................................................ 80

## CHAPTER 3: THEORETICAL FRAMEWORK FOR CREATING NON-FICTION IDNS ........................................................................................................ 82
3.1 The Beginnings of IDN Theory ............................................................................. 82
    3.1.1 Expanding IDN Theory with Digital Rhetoric and Narratology .................. 85
3.2 IDN Process: Participatory Culture as Procedural Rhetoric ................................. 88
    3.2.1 Terminology for the Participants in Digital Narratives ............................... 86
    3.2.2 The Creator-Produser Transaction Model .................................................. 92
    3.2.3 The Creator-Produser Transaction as Procedural Rhetoric .......................... 97
3.3 The Product: Evaluating Emergent Narratives ..................................................... 98
    3.3.1 The Modes of Persuasion and Digital Narrative Audiences ....................... 99
    3.3.2 Phase 1: Know the Audience – Model the Produsers ................................ 103
    3.3.3 Phase 2: Define Communication Goals/Measures .................................... 104
3.4 The System: Creating Multimodal Protostories .............................................. 105
  3.4.1 Phase 3: Delivery .................................................................................. 108
  3.4.2 Phase 4: Invention .............................................................................. 109
  3.4.3 Phase 5: Arrangement .......................................................................... 112
  3.4.4 Phase 6: Design .................................................................................. 115
  3.4.5 Phase 7: Updates ................................................................................. 117

3.5 Applying the Non-fiction IDN Theoretical Framework to Practice-based Research .......... 118
  3.5.1 Case Study Objectives Revisited .......................................................... 119

CHAPTER 4: MODELLING THE IDN PRODUSERS ................................................. 121
4.1 Phase 1 Method: Getting to Know Cultural Heritage Tourists ..................... 121
  4.1.1 Previous Studies Defining Cultural Heritage Tourists ......................... 122
  4.1.2 Cultural Heritage Tourists to the Australian Convict Sites ............... 128
4.2 Phase 1 Results: The Prospective IDN Audience ........................................ 130
  4.2.1 Total Number of Visitors ..................................................................... 130
  4.2.2 Visitor Origin .................................................................................... 133
  4.2.3 Type of Visitor ................................................................................... 135
  4.2.4 A Produser Model for IDN Prototype Development ......................... 136
4.3 Phase 2: Communication Goals for the IDN .............................................. 137
4.4 Phase 3: iDoc as the Delivery Medium ......................................................... 139

CHAPTER 5: INVENTING THE IDOC ................................................................. 141
5.1 Phase 4 Method: Inventing a Remixed Transmedia Narrative System ........... 142
  5.1.1 Determining the Data Sample ................................................................ 144
  5.1.2 Data Analysis Methods for the Nine Datasets ...................................... 152
5.2 Phase 4 Results: Identifying Discourse Patterns ......................................... 160
  5.2.1 Travel Industry Results ....................................................................... 161
  5.2.2 User-generated Content Results ............................................................ 189
  5.2.3 Expert-Produced Results ..................................................................... 208
5.3 Cross-Comparison of Three Corpora .......................................................... 215
5.4 The Content Model for the iDoc System ..................................................... 219

CHAPTER 6: IDOC CREATIVE PRACTICE & RESULTS ........................................ 222
6.1 The Art of the Creative Process .................................................................... 222
  6.1.1 Remixing the Protostories in Klynt ....................................................... 223
  6.1.2 Creative Commons and Copyrighted Material ..................................... 225
  6.1.3 Aboriginal Cultural Content Sensitivity and Inclusion ....................... 226
6.2 Phase 5: Arrangement of Narrative Layers .................................................. 227
6.3 Phase 6: Designing the IDN System ............................................................. 233
  6.3.1 The Interface Design: Creating A Sense of Place ................................ 234
  6.3.2 Colour Scheme and Font Selection: WHS Branding ......................... 235
  6.3.3 Button Styles ..................................................................................... 237
  6.3.4 Tone and Genre Conventions ............................................................... 239
  6.3.5 On-site Fieldwork Research: Photography and Music Choices .......... 240
6.4 Phase 7: Revising the Prototyped IDN ........................................................ 241
  6.4.1 Ethics Approval and Survey Design ....................................................... 241
  6.4.2 Pre-Launch Pilot Testing and Minor Revisions ................................. 243
6.5 Proof of Concept: Results of the Surveys ..................................................... 244
  6.5.1 Expert Survey Results ......................................................................... 244
  6.5.2 User Survey Results ............................................................................ 248
6.6 Discussion of Results for Future Research on iDocs ..................................... 262
  6.6.1 Produser Awareness of the Narrative Structure .................................... 262
  6.6.2 User Training / Introducing New IDN Genres ..................................... 263
  6.6.3 UX Design in iDocs ............................................................................ 265
  6.6.4 Crowdsourcing and Educational Applications .................................... 266
  6.6.5 Limitations and Future Work ............................................................... 266
CHAPTER 7: FINAL REFLECTIONS ................................................................. 268
7.1 Revisiting the Hypotheses in Light of the Findings ................................. 268
   7.1.1 Hypothesis 1: Gaps in Cultural Heritage Corpora .................................. 268
   7.1.2 Hypothesis 2: An Emergent Narrative Structure for Cultural Heritage .......... 270
   7.1.3 Hypothesis 3: Persuading Produsers to Participate .................................. 271
7.2 Main Contributions to Theory and Practice ............................................. 272
   7.2.1 Expansion of IDN Theory .......................................................................... 272
   7.2.2 Remixing Transmedia – A Transdisciplinary Method ................................. 273
   7.2.3 An Empirical Study on IDN Evaluation .................................................... 273
7.3 Future Research Directions ....................................................................... 275

REFERENCES ......................................................................................... 277

APPENDICES ......................................................................................... 311
Appendix 1 – Branches of Narratology Overview ........................................... 311
Appendix 2 – Rhetorical Narratology Participants in Narratives ....................... 312
Appendix 3 – Multimodal Discourse Analysis Codebook Templates .................. 314
Appendix 4 – Multimodal Discourse Analysis Datasets ..................................... 316
   TripAdvisor data (UGC) .............................................................................. 316
   WordPress blogs (UGC) .............................................................................. 316
   Instagram (UGC) ....................................................................................... 317
   Expert websites .......................................................................................... 317
   Codebooks – Close Reading Analysis ......................................................... 317
Appendix 5 – Sentenced to Transportation: A Virtual Tour of Australia’s Convict Past .................................................................................. 318
   The iDoc Movie Trailer .............................................................................. 318
   The iDoc Prototype ..................................................................................... 318
Appendix 6 – Expert Consent Form, Survey, and Results ................................. 319
   Informed Consent Form for Selected Experts .............................................. 319
   Expert Survey of the Australian Convicts iDoc ............................................ 321
   Expert Survey Results Dataset ................................................................. 322
Appendix 7 – User Consent Form, Survey, and Results .................................... 323
   Research Informed Consent Form ............................................................. 323
   iDoc Post User-interaction Survey ............................................................. 325
   User Survey Results Dataset ..................................................................... 331
Appendix 8 – Associated Publications ........................................................... 332
   Book Chapters .......................................................................................... 332
   Journal Papers ......................................................................................... 332
   Conference Proceedings .......................................................................... 332
   Works in Progress ................................................................................... 332
# List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.</td>
<td>Conceptual Overlaps in IDN and Digital Storytelling (Alexander, 2011, p. 40)</td>
<td>22</td>
</tr>
<tr>
<td>Figure 2.</td>
<td>Aarseth's (2012) Model of Classical Narratology</td>
<td>39</td>
</tr>
<tr>
<td>Figure 3.</td>
<td>Game Variables Analysis Model (Aarseth, 2012, p. 130)</td>
<td>41</td>
</tr>
<tr>
<td>Figure 4.</td>
<td>The Ludonarrative Continuum</td>
<td>45</td>
</tr>
<tr>
<td>Figure 5.</td>
<td>Map of the New Writing Universe (Koenitz et al., 2013, p. 28)</td>
<td>50</td>
</tr>
<tr>
<td>Figure 6.</td>
<td>Vector Narrative Structure (Ryan, 2001)</td>
<td>53</td>
</tr>
<tr>
<td>Figure 7.</td>
<td>Traditional Media versus Transmedia Franchises (Pratten, 2011, p. 3)</td>
<td>55</td>
</tr>
<tr>
<td>Figure 8.</td>
<td>Tree Narrative Structure (Nelson, 2015)</td>
<td>57</td>
</tr>
<tr>
<td>Figure 9.</td>
<td>Action Space Narrative Structure (Ryan, 2015)</td>
<td>57</td>
</tr>
<tr>
<td>Figure 10.</td>
<td>The Braided Plot Narrative Structure (Ryan, 2015, p. 175)</td>
<td>58</td>
</tr>
<tr>
<td>Figure 11.</td>
<td>Hidden Story Narrative Structure (Ryan, 2015, p. 173)</td>
<td>61</td>
</tr>
<tr>
<td>Figure 12.</td>
<td>Chatman’s (1978) Communication Model of Narrative Participants</td>
<td>89</td>
</tr>
<tr>
<td>Figure 13.</td>
<td>Communication Model (Wei &amp; Wei, 2006) and Associated Disciplines</td>
<td>90</td>
</tr>
<tr>
<td>Figure 14.</td>
<td>Models of Artificial Intelligence Systems (Szilas, 2015, p. 140)</td>
<td>95</td>
</tr>
<tr>
<td>Figure 15.</td>
<td>IDN Creator-Producer Transaction Model</td>
<td>96</td>
</tr>
<tr>
<td>Figure 16.</td>
<td>HCI Principles and Composition Principles (Rosinski &amp; Squire, 2009, p. 150)</td>
<td>103</td>
</tr>
<tr>
<td>Figure 17.</td>
<td>Seven-Phase Theoretical Framework for IDN Creation</td>
<td>108</td>
</tr>
<tr>
<td>Figure 18.</td>
<td>Tourism Statistics for 2018 in Australian Regions with Convict WHS</td>
<td>131</td>
</tr>
<tr>
<td>Figure 19.</td>
<td>Visitor Statistics to WHS According to Available Public Reports</td>
<td>132</td>
</tr>
<tr>
<td>Figure 20.</td>
<td>Number of TripAdvisor Reviews in October 2018 (including all languages)</td>
<td>132</td>
</tr>
<tr>
<td>Figure 21.</td>
<td>Country of Origin of Visitors to Sydney, Tasmania and Western Australia</td>
<td>133</td>
</tr>
<tr>
<td>Figure 22.</td>
<td>Top 5 TripAdvisor Reviewers’ Listed Countries of Origin (as of Oct. 17, 2018)</td>
<td>134</td>
</tr>
<tr>
<td>Figure 23.</td>
<td>Top 10 Australian Cities of Domestic TripAdvisor Reviewers</td>
<td>135</td>
</tr>
<tr>
<td>Figure 24.</td>
<td>Types of Visitors to Sydney, Perth and the WHS as per TripAdvisor Reviews 2018</td>
<td>136</td>
</tr>
<tr>
<td>Figure 25.</td>
<td>Text versus Imagery in Travel Guidebooks</td>
<td>169</td>
</tr>
<tr>
<td>Figure 26.</td>
<td>Types of Imagery Included in Guidebooks</td>
<td>169</td>
</tr>
<tr>
<td>Figure 27.</td>
<td>Modalities in Tourism Brochures</td>
<td>173</td>
</tr>
<tr>
<td>Figure 28.</td>
<td>Overview of Modalities Included in Australian Convict Sites’ Websites</td>
<td>178</td>
</tr>
<tr>
<td>Figure 29.</td>
<td>Allocation (%) of Textual Content on General Australian Historical Context</td>
<td>180</td>
</tr>
<tr>
<td>Figure 30.</td>
<td>Proportion of Historical Content on WHS Websites</td>
<td>185</td>
</tr>
<tr>
<td>Figure 31.</td>
<td>Percentage of WHS TripAdvisor Reviews Including Images</td>
<td>192</td>
</tr>
<tr>
<td>Figure 32.</td>
<td>Word Counts per Blog Post</td>
<td>193</td>
</tr>
<tr>
<td>Figure 33.</td>
<td>Word Count for the Collective WHS Posts</td>
<td>193</td>
</tr>
<tr>
<td>Figure 34.</td>
<td>Image Count for the Collective WHS Posts</td>
<td>193</td>
</tr>
<tr>
<td>Figure 35.</td>
<td>Quantitative Results for Images, Videos and Comments for Instagram Posts</td>
<td>195</td>
</tr>
<tr>
<td>Figure 36.</td>
<td>Themes with Associated “Top Term” Counts in TripAdvisor Reviews</td>
<td>196</td>
</tr>
<tr>
<td>Figure 37.</td>
<td>Number of WordPress Blog Posts Gathered Related to Each WHS</td>
<td>200</td>
</tr>
<tr>
<td>Figure 38.</td>
<td>Thematic Photographic Clusters Across Geotagged WHS Locations</td>
<td>203</td>
</tr>
<tr>
<td>Figure 39.</td>
<td>Main Subject-matter Featured in Instagram Videos</td>
<td>204</td>
</tr>
<tr>
<td>Figure 40.</td>
<td>Word Counts for Expert Content Web Pages</td>
<td>212</td>
</tr>
<tr>
<td>Figure 41.</td>
<td>Survey Respondents Travel Interests</td>
<td>250</td>
</tr>
<tr>
<td>Figure 42.</td>
<td>User Time Spent Exploring iDoc</td>
<td>251</td>
</tr>
<tr>
<td>Figure 43.</td>
<td>User-reported Reason for First Site Selection</td>
<td>251</td>
</tr>
<tr>
<td>Figure 44.</td>
<td>Subsequent Navigation Options Most-often Selected by Users</td>
<td>252</td>
</tr>
<tr>
<td>Figure 45.</td>
<td>User Responses to Q11 – “I had sufficient freedom to choose content”</td>
<td>254</td>
</tr>
<tr>
<td>Figure 46.</td>
<td>User Responses to Q13 on Consequences of Choices</td>
<td>254</td>
</tr>
<tr>
<td>Figure 47.</td>
<td>Modalities Users Desired More of</td>
<td>256</td>
</tr>
<tr>
<td>Figure 48.</td>
<td>Level of Dark Tourism in Design</td>
<td>257</td>
</tr>
<tr>
<td>Figure 49.</td>
<td>How Much Respondents Self-reportedly Learned from the iDoc</td>
<td>259</td>
</tr>
<tr>
<td>Figure 50.</td>
<td>Respondents’ Expression of Interest to Visit the WHSs</td>
<td>261</td>
</tr>
<tr>
<td>Figure 51.</td>
<td>Likelihood Respondents Were to Recommend the iDoc to Others</td>
<td>261</td>
</tr>
</tbody>
</table>
List of Tables

Table 1. Narratological Terms Across Schools of Thought (as cited in Mani, 2013, p. 5) 39
Table 2. A Ludonarrative Toolkit for Analysing IDNs (Basaraba, 2018, p. s13) 49
Table 3. The Five Classic Rhetorical Canons Revised for Digital Media and IDNs 107
Table 4. Chapter Structure for Creative Practice According to IDN Theory 120
Table 5. Sampling Techniques for Corpora and Corresponding Datasets 146
Table 6. The UNESCO WHS Websites Dataset 148
Table 7. Overview of Corpora and Associated Methods of Analysis 153
Table 8. Comparison of Pauwels' (2012) Framework and Bateman's (20008) GeM Model 156
Table 9. Overview of Travel Guidebooks’ Audiences and Focus. 163
Table 10. Summary of Spatial Layout for Australian history and Convict Sites Content 168
Table 11. Level of Visual Dark Tourism in the 12 UNESCO WHS Websites 174
Table 12. Quantitative Summaries of 11 UNESCO Australian Convict WHS Websites 177
Table 13. UNESCO World Heritage Australia Convict Sites in Travel Guidebooks 182
Table 14. WHS Websites’ Sitemap Depth 185
Table 15. Official Convict Sites’ Website Content Themes 186
Table 16. Distinctive Words and Associated Counts for each Convict Site 197
Table 17. Themes in WordPress blogs on Australian Convict Sites 201
Table 18. Frequently used Hashtags at Each Geotagged Site on Instagram 206
Table 19. Quantitative Results Across the Nine Datasets 216
Table 20. WHS Existing Content Overview Ordered from Most to Least 217
Table 21. Modalities Across Nine Datasets 218
Table 22. Thematic Protostory Layers (Macro-narrative) 220
Table 23. Perspectives Included in iDoc Prototype 221
Table 24. Modalities Used in Klynt 225
Table 25. User Model Compared to Survey Respondents 249
Table 26. Branches of Narratology and Some Associated Theorists 311
Table 27. Template of Codebook 1: GeM Analysis for Printed Artefacts 314
Table 28. Template of Codebook 2: Multimodal Discourse Analysis for Websites 315
List of Images

Image 1. UNESCO World Heritage Australian Convict Sites Screenshot from Klynt
Image 2. Interactive Narrative Structures (Ryan, 2005 as cited in Zhao, 2010)
Image 3. Patchwork Girl Screenshot from Storyspace (Sasha, 2010)
Image 5. Screenshot from Storymap.ie
Image 6. Voyant Tools Screenshot Sample for Cascades Female Factory
Image 7. PixPlot Sample Output for the Old Government House
Image 8. Australian Convict Sites Brochures’ Colour Branding
Image 10. Cockatoo Island - Dark (Screenshot May 28, 2019)
Image 11. Hyde Park Barracks Museum – Moderate (Screenshot May 28, 2019)
Image 12. Coal Mines - Moderate (Screenshot May 28, 2019)
Image 13. Port Arthur - Moderate (Screenshot May 28, 2019)
Image 14. Cascades Female Factory - Light (Screenshot May 28, 2019)
Image 15. Brickendon - Light (Screenshot May 28, 2019)
Image 16. Woolmers - Light (Screenshot May 28, 2019)
Image 17. Maria Island - Light (Screenshot May 28, 2019)
Image 20. Old North Road - Light (Screenshot May 28, 2019)
Image 21. Most-frequent Words in Instagram Captions Exported from Cirrus Tool
Image 22. Concentric Narrative Structure (Munday, 2018)
Image 23. Klynt Screenshot of Final Narrative Structure for Sentenced to Transportation
Image 24. Homepage for Sentenced to Transportation: A Virtual Tour of Australia’s Convict Past
Image 25. Map Menu for WHS Selection (Sentenced to Transportation, 2020)
Image 26. Text-based iDoc Menu (Sentenced to Transportation, 2020)
Image 27. Sample TimelineJS for Fremantle Prison, WA (Sentenced to Transportation, 2020)
Image 28. Sample Story Node for Settlement History of Norfolk Island
Image 29. Sample of Person Profile - Convict Catherine Bartley, Cascades Female Factory
Image 30. Sample of Nearby Attractions for Hyde Park Barracks Museum, NSW
Image 31. Sample of Transmedia Extension - Mobile App for the Old Great North Road, NSW
Image 32. Dog Line - Tasman Peninsula Node Showing Learn More Button
Image 33. Port Arthur Story Node Showing Navigation Buttons
Image 34. Fremantle Prison Story Node Showing Navigation Buttons
Image 35. Fremantle Prison Story Node with Hamburger Navigation Button in Top Left
Image 36. Retweet dated January 27, 2020
Image 37. Twitter Retweets dated January 31, 2020
Image 38. Twitter Responses dated February 5, 2020
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Affordance</strong></td>
<td>is used in this thesis to describe the communicative and technical advantages of digital media.</td>
</tr>
<tr>
<td><strong>Agency</strong></td>
<td>refers to the concept of <em>dramatic agency</em> which describes the positive experience users feel when their interaction with a digital narrative system produces a compelling change to the story (e.g., plot twist or a new event).</td>
</tr>
<tr>
<td><strong>Content analysis</strong></td>
<td>a term often used by communications and media scholars to refer to a methodology involving the systematic collection of both qualitative and quantitative data through coding qualities such as structural features, content modalities, and themes.</td>
</tr>
<tr>
<td><strong>Corpus</strong> (plural: corpora)</td>
<td>the term corpus is often used by linguists to refer to collections of textual data (e.g., written works). Corpus and corpora are used to describe the different datasets analysed in this thesis.</td>
</tr>
<tr>
<td><strong>Cross-media</strong></td>
<td>Refers to public communications on a topic that appear in multiple media, such as books, TV, newspapers, and social media. For example, one message can be cross-posted or cross-published on another media like a newscaster’s video clip can appear on a Facebook page.</td>
</tr>
<tr>
<td><strong>Cultural heritage tourism</strong></td>
<td>a niche in the tourism industry that includes people who enjoy and are interested in visiting museums, galleries, archaeological sites and learning about the local intangible culture (e.g., stories, music, traditions).</td>
</tr>
<tr>
<td><strong>Digital Humanities</strong></td>
<td>a hybrid domain, previously known as Humanities Computing, which involves using computational methods in humanities disciplines or applying humanities topics to computer science projects. Many scholars still debate the definition and scope of this research area.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Gatewatchers</td>
<td>a term coined by Axel Bruns (2005), gatewatchers refers to Internet users who observe the publications of news channels to identify important communications and developments.</td>
</tr>
<tr>
<td>Interactive digital narrative</td>
<td>an umbrella term that encompasses the studies in various digital narrative genres (e.g., video games) that require user interaction for the story to unfold. All genres of interactive digital narrative consist of a digital system, a process of user interaction, and a final narrative product (Koenitz et al., 2013).</td>
</tr>
<tr>
<td>Interactive digital narrative system</td>
<td>describes the digital platform (e.g., website, DVD) that contains all the potential narratives.</td>
</tr>
<tr>
<td>Interactive digital narrative process</td>
<td>the user’s interaction with the narrative system.</td>
</tr>
<tr>
<td>Interactive digital narrative product</td>
<td>the unique or emergent narrative created by each player/user’s interaction with the digital system.</td>
</tr>
<tr>
<td>Ludonarrative</td>
<td>a concept that refers to a playable (ludens meaning to play in Latin) narrative because it involves game-like qualities. Ludonarrative is sometimes used interchangeably with interactive digital narrative.</td>
</tr>
<tr>
<td>Ludonarrative dissonance</td>
<td>the feeling of detachment a video game player experiences when the ludic structure (i.e., procedures of the game) do not match or coincide with the narrative structure (i.e., plot). The term was coined by Clint Hocking in 2007.</td>
</tr>
<tr>
<td>Macro-narrative</td>
<td>some interactive digital narratives may have more than one structure, such as transmedia narratives, which have many individual narratives that contribute to the whole narrative. In interactive narratives, the interactivity and narrative plotting can take place at a macro-level or micro-level. Macro-narrative in this thesis refers the overarching theme (i.e., storyworld) or full scope and structure, which can include one or more micro-narrative structures.</td>
</tr>
<tr>
<td><strong>Medium (plural: media)</strong></td>
<td>the channel through which semiotic modalities of communication are applied. Examples of different media are paper, radio, TV, and computers.</td>
</tr>
<tr>
<td>----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Micro-narrative</strong></td>
<td>are the smaller plot structures that may be contained within macro-narrative structures.</td>
</tr>
<tr>
<td><strong>Mode/Modality</strong></td>
<td>are the semiotic resources of communication, such as text, video, image, oral speech, gesture, etc.</td>
</tr>
<tr>
<td><strong>Multimodality</strong></td>
<td>the simultaneous use of different semiotic modes of communication within one medium.</td>
</tr>
<tr>
<td><strong>Multimodal discourse analysis</strong></td>
<td>a research methodology, commonly used by linguists and media scholars, to analyse the interactions between different semiotic modes of communication beyond text (e.g., photos, illustrations, sounds).</td>
</tr>
<tr>
<td><strong>Narrative</strong></td>
<td>has been defined in a variety of ways across different disciplines. Narratologists alone have developed multiple definitions. The definition applied in this thesis stems from cognitive narratology where narrative is a “forgiving, flexible cognitive frame for constructing, communicating, and reconstructing mentally projected worlds” (Herman, 2002, p. 49).</td>
</tr>
<tr>
<td><strong>Narrative paradox</strong></td>
<td>the challenge experienced by authors when trying to manage the tension between narrative cohesion and permitting user interactivity because they work in opposition.</td>
</tr>
<tr>
<td><strong>Narratology</strong></td>
<td>a humanities discipline that explores which qualities make narratives differ from each other, for example, in terms of structure, context, and meaning.</td>
</tr>
<tr>
<td><strong>Personalisation</strong></td>
<td>an area of research in computer science, and related disciplines, that explores methods of customising the presentation or recommendation of digital content according to specific users’ personal characteristics, needs, or interests.</td>
</tr>
</tbody>
</table>
**Produser**
a portmanteau of producer and user, produser is applied in this thesis to define the role of the reader/user/audience in IDNs. The term was coined by Axel Bruns in 2007 who used it in the context of news/journalism to describe the production of ideas by Web 2.0 users.

**Remediation**
is a term attributed to Bolter and Grusin (1999) who explain it as reusing the communication method of one medium into another medium (the second often being a digital medium).

**Transmedia storytelling**
coined by Jenkins (2006), transmedia storytelling refers to the concept of a single story being told across multiple media platforms where each medium serves a complete and unique contribution to the larger storyworld.

**User-generated content**
refers to active Internet users who put in a certain amount of creative effort into producing communications using Web 2.0 technologies. Other terms used interchangeably with user-generated content are user-led content and vernacular content.
Acronyms

ARGs  Alternate Reality Games
AR    Augmented Reality
CYOA  Choose Your Own Adventure
GeM   Genre and Multimodality Model
GLAMs Galleries, libraries, archives and museums
HCI   Human-computer interaction
HTML  Hypertext Markup Language
iDoc  Interactive Documentary
IDN   Interactive Digital Narrative
KAVHA Kingston and Arthur’s Vale Historic Area
NSW   New South Wales
PAHSMA Port Arthur Historic Site Management Authority
UGC   User-generated Content
UK    United Kingdom
UNESCO United Nations Educational, Scientific and Cultural Organisation
USA   United States of America
UX    User experience
WA    Western Australia
WHS   World Heritage Site
Chapter 1: Introduction

1.1 Anecdote

Imagine you are planning a trip to Australia. You have always wanted to visit its beautiful cities, landscapes, and to find out more about its history and culture. You heard amazing things about it from your friends who recently visited, so you finally decide to plan a trip. Your friends’ advice is great, but you have slightly different travel interests than them. There are an overwhelming number of possible informational sources you could consult. You could pick up a travel guidebook, do a Google search, check out reviews on TripAdvisor, photos on Instagram, advice on blogs, or contact a travel agency, but with all these choices, where should you start to find the content you want?

1.2 Media Divergence, Multiple Narratives, and Information Overload

This anecdote captures the real-world challenge that inspired this research, and it is experienced by many tourists who may consult multiple sources of cross-media content, which can be brief, repetitive, or contradictory. For example, one TripAdvisor review may give a place a glowing recommendation and another reviewer rates it one out of five stars, but what does this information actually tell someone? How does it provide them with a sense of place? Potential tourists often hunt, gather, and piece together differing content sources from tourism marketing, personal narratives, and opinions on social media to form an impression of a destination and compile a custom travel plan suited to their interests. This thesis shows how these types of cross-media tourism content can be converged and remixed into a digital narrative rooted in cultural heritage to present potential visitors with a multi-perspective overview of a destination and allow them to choose their own adventure.

Before digital narrative and tourism are discussed in more detail, the socio-cultural context that has impacted these sectors highlights the need for this investigation. A rapid increase of media divergence came with the developments in

---

1 Cross-media (n.d.) is defined as “involving more than one form of public communication.”
digital technologies, including the computer, the Internet, and mobile devices—collectively referred to as digital media or new media\(^2\). This current socio-cultural situation, described as *rhetorical convergence*, is “a proliferation of genres as forms of expression that may be reused across media” (Fagerjord & Storsul, 2007, p. 24). *Digital culture*\(^3\) is a concept that media scholars use to discuss “the ways humans and machines interact in the context of ever-increasing computerization and digitization of society” (Deuze, 2006, p. 66). These changes created shifts in cultural content consumption because the Internet gave rise to “active agents” or participants who engage in the process of meaning-making through the adoption, modification, manipulation, and reformation of understanding reality (Deuze, 2006, p. 66). Media consumers have responded over the years in a variety of ways (e.g., letters to the editor of printed newspapers), but digital media enables users to “‘talk back’ in the same multimodal language used to frame cultural products that were formerly made exclusively in studios” (van Dijck, 2009, p. 43). Digital media, such as Web 2.0 social media platforms, expanded the space available and provided access to users who have become media producers (Bruns, 2005, p. 15). Media consumers, referred to as readers of print, became known as users of the Internet.

Digital media allows users to communicate with text, photos, video, and other modalities to respond to media producers, create personal and niche content that may not be accepted or commonly published by *gatekeepers*\(^4\) (e.g., media companies). The Internet has amassed vast amounts of cross-media content because “on the Web everyone has the potential to be a publisher” (Bruns, 2005, p. 15). This more active role of Internet users was first used in the context of journalism and online news where, Bruns (2005) explains, many Internet users engage in *gatewatching* or the observation of the “output gates of news publications and other sources, in order to identify important material as it becomes available” (p. 17). Some Internet users (e.g., *gatewatchers*) provide contextualisation, point to a range of alternative views, and interpretations of content that are tailored to different user needs (Bruns, 2005, p. 19).

---

\(^2\) Manovich (2001) clarifies that new media refers to content distributed on a computer rather than the use of digital technologies to produce the content; for example, feature films or photography that use digital composition techniques are not considered new media (p. 19).

\(^3\) Digital culture is sometimes used interchangeably with digital society, Digital Age, Information Age, Computer Age, or cyberculture.

\(^4\) Gatekeeping refers to a regime of control over the content produced in print and broadcast media and is controlled by journalists, editors and owners of the media or the “gates” through which the content is released (Bruns, 2005, p. 11).
The Internet is “associative, cumulative, multi-linear and unstable,” and it offers opportunities to engage with multiple perspectives (Bruns, 2005, p. 22-24). It has created a more diverse and responsive media culture or “participatory culture” (Jenkins & Deuze, 2008, p. 6). The availability of all these alternative forms and sources of content has both advantages, such as democratising the tools, ability to publish, and allowing for more diverse points of view, but it has also presented challenges.

One challenge with the growth of these alternative views is a decrease of the public’s trust in “official narratives,” or those created by gatekeepers, so they have reacted by creating content. For example, public participation has removed the reliance on journalists, public relations and marketing, and professional storytellers to make sense of our world (Deuze, 2006, p. 66). This cultural shift, described as media convergence by Jenkins (2004), is more than a technological change because it “alters the relationship between existing technologies, industries, markets, genres and, audiences. Convergence refers to a process, but not an endpoint” (p. 34). He explains that media convergence is both a “top-down corporate-driven process and a bottom-up consumer-driven process” (Jenkins, 2004, p. 37). Digital media and particularly Web 2.0 facilitate the convergence of corporate-produced and user-generated content (UGC). For instance, UGC was popularised through blogs and wikis (Shirkey, 2003) and often published in response to or as an alternative to expert- or professionally produced content. Internet users who are also producers of content have been called produsers – a portmanteau of the two roles – by Bruns (2007), who uses the term in the context of citizen journalists (i.e., not-professionally trained) who publish UGC on various digital media platforms. In addition to news, produsers play an active role in converging expert-produced content with their own content on a variety of topics in the form of remixes. Media convergence “has, as it were, broken apart the building blocks of genres in earlier media, and given them all to the digital author to set up new rhetoric constructions with many combinations of materials” (Fagerjord, 2003). For example, millions of produsers have created remixes of video content with music, photos, news clips, and screenshots from other websites and published them on YouTube. Although not all Internet users participate to the level of producing content, most users at least view UGC in addition to that which is produced by media.

5 User-generated content is a term the refers to users as “active internet contributors, who put in a ‘certain amount of creative effort’ which is ‘created outside of professional routines and platforms’” (van Dijck, 2009, p. 41). Other terms used interchangeably with user-generated content are user-led content and vernacular content.
companies or other subject-matter experts (i.e., authorities), such as local newspapers, government publications, or professionally published books. This convergence blurs the ability to identify the original source, which can be difficult to identify, and has resulted in a situation of fake news, and information overload.

This participatory culture has become, what Manovich (2016) calls a “big-cultural-data challenge” because more content is being produced by both experts in the creative industries⁶ and users. The Internet presents a digital world that is wide open to interpretations, it allows for collaborative production without “official” or sanctioned institutions (gatekeepers) to make meaning and create knowledge for users and this raises issues of credibility and reliability (Bruns, 2005, p. 20). Social communities – no longer tied to physical geography – are emerging on the Internet through voluntary, temporary, and tactile affiliations based on shared intellectual interests and emotional investments, and they are sustained through the mutual production and exchange of knowledge (Jenkins, 2004, p. 35). In other words, they form groups, new niches, and communities who share and produce content they have a topical interest in, such as travelling. These groups create a sense of community by self-organising, self-regulating, and building trust in each other. This situation of media divergence, convergence, and shifting values towards multiple perspectives rather than one “official narrative” has resulted in big data that can be difficult to navigate, especially if a person is not an active member of a trusted online community. Therefore, this increasingly participatory culture is changing the previously well-understood methods of communication and storytelling, and this calls for a cultural examination of the changes taking place between media production and consumption (Jenkins, 2004, p. 36). In the case of travel and destination-focused narratives, it requires a re-examination of existing and emerging digital genres to inform the practice of producing future creative pieces that can serve the needs of tourists who are interested in cultural heritage.

---

⁶ Creative industries are also known as cultural industries and the creative economy (Throsby, 2008). The creative industries include advertising; architecture; craft; product, graphic, and fashion design; film, TV, video, radio, and photography; IT, software, computer services; publishing; museums, galleries and libraries; and music, performing and visual arts (Department for Culture, Media & Sport, 2015).
1.3 Narrative Across Media

Narratives have been told for centuries from pre-history through the Stone, Bronze, Iron, and Mechanical Age in different media (e.g., oral stories, cave paintings, carved into stone, printed books) and are a product of their culture and time. Prior to the development of digital media, the printed format of storytelling developed into a well-established process of production followed by consumption. For example, books were written by authors, vetted by publishers, printed, distributed, and then consumed by readers. Book publishers act as gatekeepers because they have the skills and resources to edit, print, distribute, and market books. The rise of digital media affected all stages of communication, including acquisition, manipulation, storage, and distribution (Manovich, 2001, p. 19). The interactive affordance of digital media had a particularly significant impact on the communicative process, but before it was adopted into digital media, the concept of interactivity also existed in printed narratives.

A famous example of interactivity in printed narratives is the Choose Your Own Adventure (CYOA) novel series for children by author Edward Packard, which sold 250 million copies in the 1980s and 1990s. The CYOA novels were written from a second-person point of view where the reader became the protagonist, made narrative choices by turning to different pages, and these actions determined how the story ended. The control CYOA novels provided readers with presented higher re-readability opportunities because there were different narrative paths and some had over 40 different possible endings. These books also included multimodal content in the form of text and illustrations. The concept of multimodality (Kress & van Leeuwen, 2001) has become widely established – replacing literary terms like intertextuality and intermediality – to describe the presence of more than one mode or semiotic channel in a given work (Ryan, 2012, para. 11). The CYOA novels have been considered a precursor to video games (NerdAlert, 2014) and are sometimes referred to as gamebooks. Later books in the series began to offer fewer endings and less exciting plots, and the rise of video games, which provided the same interactivity in “an even

---

7 Multimodality exists in printed novels including text and non-verbal modes, such as the reproduction of visual images like photos, paintings, graphics diagrams, and the reproduction of handwritten letters and notes (Hallet, 2009, p. 129).

8 Intermediality “denotes communication through several sensory modalities at once, for instance, music and moving images. […] intermediality concerns the interrelations between media as institutions in society, as addressed in technological and economic terms such as convergence and conglomereration” (Jensen, n.d.).
more addictive format,” resulted in a downturn in the market for the books (Rossen, 2014, para. 19). The CYOA series is a publishing landmark (Rossen, 2014), the concept is well understood across the world, and it set the standard of what became known as the genre of interactive fiction (Monfort, 2011). As interactive fiction moved into the digital medium, it became known as hypertext fiction. Since the emergence of hypertext fiction, more digital media technologies were developed and a variety of new forms of digital storytelling gave rise to the academic concept of interactive digital narrative.

1.4 Interactive Digital Narratives versus Digital Storytelling

The term interactive digital narrative (IDN) encompasses the areas of intelligent narrative technologies, interactive drama, interactive storytelling, and narrative games (Monfort, 2015, p. x). The term narrative is often used interchangeably with the term story, but the concept of narrative allows researchers to specify the object of their discipline and isolate the features relevant to their inquiry (Ryan, 2007, p. 28). IDN theorists apply Herman’s (2002) definition of narrative as a “forgiving, flexible cognitive frame for constructing, communicating, and reconstructing mentally projected worlds” (p. 49) because it “de-couples narrative from specific forms or media and opens up the space for experiments in IDN” (Koenitz, 2010, p. 178). IDN connects art and technology to permeate the fourth wall, where the user enters the narrative and participates in its unfolding (Koenitz, Haahr, Ferri & Sezen, 2013, p. 1). Thus, IDNs have some commonalities with CYOA novels as they provide an experience “in which users create or influence a dramatic storyline through actions, either by assuming the role of a character in a fictional virtual world, issuing commands to computer-controlled characters or directly manipulating the fictional world state” (Riedl & Bulitko, 2013, p. 67). As a result of providing users with the dramatic agency to interact and participate in the narrative, IDNs do not have a fixed state of content and structure; they are malleable (Koenitz et al., 2013, p. 91).

To date, IDNs encompass many different formats, including hypertext fiction, interactive cinema/movies/drama, interactive video installations, virtual reality narratives, transmedia stories, and video games. The theoretical study of IDN grew out

---

9 The concept of dramatic agency is “the satisfying power to take meaningful action and see the results of our decisions and choices” (Murray, 1997, p. 126).
of “disciplines within computer graphics and interactive systems” (Spierling, 2005, p. 64) and now involves scholars from a variety of disciplines. If IDN is separated into its three parts – namely interactivity, the digital medium, and narrative – each has historically been researched in different disciplines. Interactivity is most often studied by computer scientists and psychologists in human-computer interaction (HCI), the digital medium has been widely studied by communications and media scholars, and narrative has been studied by composition and literary scholars. However, IDN is “a marriage of computation and narration that brings together perspectives originating in Computer Science and the Humanities” (Koenitz, 2017, p. 361), and what distinguishes the field is a user-controlled computational narrative (Monfort, 2015, p. xii). IDN combines technical developments, advances in artistic expression, and the expansion of analytical perspectives (Koenitz, 2017). Several scholars recommend an interdisciplinary approach to IDN study (Dena, 2009; Chen, 2014), but Koenitz et al. (2013) note that it has historically been difficult to find interdisciplinary projects or perspectives on IDN (p. 2). This thesis aims to fill this gap by taking a transdisciplinary approach to the study of IDN.

Transdisciplinary research recognises the interactions and reciprocities between the specialised research and locates “these links inside a total system without stable boundaries between the disciplines” (Jean Piaget as cited in Niculescu, 2010, p. 20). Transdisciplinary research has been characterised as problem-focused, applying an evolving methodology and collaboration (Wickson, Carew, & Russell, 2006). It is characterised by a focus on real-world problems with a notion of creating change and providing practical outcomes that can be applied to a social or environmental context (Wickson et al., 2006, p. 1049). On the other hand, Wickson et al. (2006) argue that (Wickson et al., 2006, p. 1049). These terms can and have been debated at length but they help situate the approach of this thesis which shows an “interpenetration of epistemologies” in the development of unique methodologies tailored to the research problem/question in the context of tourism (Wickson et al., 2006, p. 1049). This thesis takes a media studies approach to the study of digital narrative and weaves together theories and methodologies from literary studies, game studies, digital humanities, linguistics, and human-computer interaction.

Before IDN emerged as a field, other scholars have referred to it as digital storytelling, which is still used in many contexts in a similar way that the terms
‘narrative’ and ‘story’ are used interchangeably. As mentioned at the beginning of this section, the terms narrative and IDN specify the aspects addressed in this thesis. Digital storytelling concepts relevant to this research are the overlapping domains and complex relationship between storytelling, gaming, and social media (see Figure 1). In the case of IDNs, each genre has varying degrees of narrative, play/ludens, and participatory culture, and these variables can compete with each other. For example, the emergence of game studies, or ludology, as a new discipline in the 1990s resulted in the argument that games are not narratives to distinguish their focus on game design and mechanics (Koenitz, 2013, p. 94). However, the situation is not that clearly delineable as the resulting debate between narratology (i.e., the study of narratives) and ludology (i.e., the study of games) showed.

Figure 1. Conceptual Overlaps in IDN and Digital Storytelling (Alexander, 2011, p. 40)

![Conceptual Overlaps in IDN and Digital Storytelling](image)

A decade-long debate ensued between narratologists (i.e., scholars of narrative) and ludologists (i.e., scholars of game studies) on whether video games contain narrative and the narrative paradox (Aarseth, 2012) and it had a significant impact on IDN studies. The significant challenge in creating interactive narratives is that “as the level of interactivity increases, it becomes more difficult to maintain the shape of the narrative” (Hargood, Jewel & Millard, 2012, p. 1). This challenge is referred to as the narrative paradox, which describes the tension between narrative cohesion and interactivity. The narrative paradox “revolves around the conflict between pre-

---

10 Huizinga (1949) describes “Homo Ludens” as “Man the Player” and argues that play is not a biological phenomenon, but as a cultural phenomenon (p. i).
authored narrative structures – especially plot – and the freedom a VE [virtual environment] offers a user in physical movement and interaction, integral to a feeling of physical presence and immersion” (Louchart & Aylett, 2003, p.244). If the IDN author does not balance narrative and (digital) interaction, it can result in *ludonarrative dissonance*. Ludonarrative dissonance is the feeling of detachment the players experience because the ludic structure (i.e., their actions) works in opposition to the narrative structure (i.e., plot/story) and thus it “destroys the player’s ability to feel connected to either” (Hocking, 2007, para 4). In the end, the debate drew attention to the considerable design challenge for IDN creators regarding the opposing roles of narrative and interactivity.

Interactive narrative design is a “wicked problem” and “there exists no theoretical framework that allows one to formally define the problem and solution criteria” (Mateas & Stern, 2005, p. 9). In a move towards developing a theory for IDN, Koenitz et al. (2013) outlined the three components that all IDNs have regardless of genre—the *system*, *process*, and *product*. The *system* is the digital artefact that contains all the potential narratives, the *process* is the user’s interaction with the system, and the *product* is the unique or emergent narrative\(^\text{11}\) created by each player/user (Koenitz et al., 2013, p. 179). This basis of IDN theory provides a common ground from which scholars can discuss different IDN genres but it does not fully encompass the impact participatory culture has had on the creation of IDNs nor the users’ responses to IDN experiences (e.g., evaluation). Furthermore, IDNs have mostly been developed and studied by ludologists in the genre of fictional video games (Koenitz et al., 2013, p. 29-30), but IDNs are beginning to appear in non-fiction applications, such as education and training (Riedl & Bulitko, 2013, p. 67). There has also been a substantial increase in IDNs created for the cultural heritage sector.

### 1.5 Non-fiction Narrative Focus: Cultural Heritage

This thesis focuses on the context of cross-media content produced for the *cultural heritage tourism* sector to examine the theory and practice of creating IDNs. Cultural heritage tourism is viewed as a subset of cultural tourism, but the terms

---

\(^{11}\) Emergent narrative “by any other name would be dramatic improvisation. The story produced by a group of improvising actors is not determined from the top down, by a playwright or director; nor is it the creation of any one actor. Instead it emerges from the interactions among the members of the group—that is, the elements of the system” (Walsh, 2011, p. 76).
cultural tourism, heritage tourism, ethnic tourism, and arts tourism are used interchangeably with limited consensus regarding whether they are the same thing (Timothy & Boyd, 2003, p. 5). The term cultural heritage tourism and its related variations were used in the latter part of the twentieth century to “define the idea of traveling to a location for the sake of experiencing its history, landscape, and culture” (Ungvarsky, 2017). The concept of cultural heritage tourism refers not only to what tourists see and visit but also why; it involves “the movement of persons to cultural attractions away from their normal place of residence, with the intention to gather new information and experiences to satisfy their cultural needs” (Richards, 1996, p. 24).

Cultural heritage tourists have unique interests and tend to seek local heritage through archaeological sites, historic landscapes, local architecture, museums, art expressions, traditions, and practices of the past (Timothy & Nyaupane, 2009). Cultural heritage tourism is a rich area for IDN development because (1) memory institutions, such as museums, galleries, archives and libraries (GLAMs) are increasingly experimenting with digital media exhibitions to communicate history because they have more tools to preserve and access digitised historical information and artefacts, (2) heritage is complex and there is no single story, and (3) members of the public (e.g., Internet users) are creating content related to heritage tourism. These societal factors make the cultural heritage sector a ripe domain for applying IDNs, which can converge these types of content into a multi-perspective narrative.

GLAMs are primary sources of cultural heritage content and they are increasingly digitising their materials (e.g., artefacts, books, photos, records, etc.), creating virtual tours, and personalised experiences for the public to experience history and culture (Ardissono, Kuflik, & Petrelli, 2012). These digital heritage products, while not primarily created for tourists, contribute to the overall cultural data that cultural heritage tourists reference. Heritage institutions and practitioners are using communication technologies and social media to encourage visitor interaction with cultural heritage, but “there is little understanding of how emerging technologies are powerfully connecting heritage experience to people’s lives and settings” (Giaccardi, 2012, p. 3). Heritage professionals enable contemporary communities to digitally reproduce historical environments, and create “collective narratives and geographical visualisations that cluster individual perspectives into shared forms and processes of remembering” (Silberman & Purser, 2012, p. 14). However, Silberman & Purser
(2012) warn that GLAMs have, at times, used digital technologies to “merely enhance the dominance of the authorized, official narratives that have degraded and, in many cases, replaced the creative power of both individual and collective memory” (p. 17). Heritage can be presented in a myriad of ways through the selective curation of artefacts and narratives, the perspectives presented, and the potential use of digital media to display heritage. The challenge for GLAMs, who have not traditionally employed storytellers or creatives, is how to capitalise on digital media to help present different options or narratives to the public.

In the past, some constructions of heritage have been criticised as being “overly selective, of hiding historic processes beneath glamourised, nostalgic presentations of the past and, in its appeal to the communal and the collective, to exclude many social groups within a multi-cultural society” (Aitchison et al. 2000, p. 109). The reason for this was that historically heritage interpreters found it easier to present a specific moment in time, but this has become a challenge in a rapidly changing society where many other histories are being read, interpreted, and acted out at heritage sites (Aitchison et al., 2000, p. 109). For example, the museum experience is moving towards audience-oriented exhibitions, which shifts focus from individual objects to a “whole gallery experience” where objects are rarely left to “speak for themselves” and meaning is made in collaboration with semiotic modalities, such as space, visual images, and language (Meng, 2004, p. 31). Social historians are also supplementing objects with maps, photographs, documents, and oral history taken from everyday experience to create a range of stories about an object, not merely the dominant history. Thus, “the hidden stories of disadvantaged social groups, such as the working classes, women, minority ethnic groups and children can be explored” (Aitchison et al., 2000, p. 98). For example, the People’s Palace in Glasgow, The People’s Story in Edinburgh, and the Living Museum in Skansen, Sweden, explore other social groups (Aitchison et al., 2000). Although GLAMs are making progress, when tourists visit these institutions, they may only have time for or be presented with one slice of cultural heritage and their experience ends when they leave.

The danger of a single story is that “our lives and our cultures are composed of a series of overlapping stories, if we hear only a single story about another person, culture, or country, we risk a critical misunderstanding” (Adiche, 2009). Heritage is socially constructed and the presentation of these narratives in digital forms allows for
a more democratic process of creation and this poses an opportunity for using IDNs. Heritage “meanings and values are not attached to artefacts, buildings or sites. Neither are they frozen in time. They are the results of repeated and ongoing interactions in the lived world of ordinary people” (Byrne, 2008, as cited in Giaccardi, 2012, p. 2). Therefore, as Giaccardi (2012) argues, ordinary people should be considered and, better yet, involved in the construction of heritage, which expresses “constantly evolving values, beliefs, knowledge and traditions (Council of Europe 2005, from Art. 2)” (p. 2). The Internet has forced historians to confront the multiplication of popular productions and they use the concept of shared authority to describe the democratisation of the knowledge-building process where audiences are never passively consuming knowledge produced by expert historians (Cauvin & O’Neill, 2017, p. 5). As previously discussed, the Internet has resulted in the proliferation of content, including heritage topics, from personal, local, national, and global perspectives. As “ordinary people” share their cultural customs and life experiences using digital media, it moves closer towards creating a shared heritage within and outside the physical space of GLAMs.

Thus, not only have GLAMs move towards democratising access to history using digital media, but a plethora of UGC on cultural heritage experiences has been and continues to be produced by tourists through social media. For example, TripAdvisor, Instagram, and Facebook allow people to share their travels through photos and stories, which created major shifts in the travel industry (May, 2014). Tourism blogs proliferated as people shared personal narratives and experiences that are often tailored to niche travel communities, such as solo, women’s, adventure, budget, and arts and culture travel (TBEX, 2017). The social web provides people with access to specific travel information from people with similar interests and who they tend to trust more than official or professional sources. Multiple studies show that tourists refer to and trust UCG when making decisions about trip planning (O’Connor, 2008; Ye, Law, Gu & Chen, 2011; Yu, Carlsson, & Zou, 2014; Mendes-Filho, Mills, Tan & Milne, 2017; Ukpabi & Karjaluoto, 2018). As a result, travel guidebook publishers – such as Fodors, Frommer’s, Lonely Planet, DK Eyewitness Guides, and Rough Guides – saw shrinking sales, close to 40% in the 2000s for their printed guides (Mesquita, 2012). Many travel guidebook publishers responded to competition from UGC by producing digital content. However, the guidebooks still focus on general
audiences and mostly appeal to middle-class families, as evidenced by the suggested accommodation, restaurants, and sightseeing recommendations listed at middle-class price points with a few options above and below (Pfanner, 2008). Thus, the three corpora of cultural heritage content considered in this thesis are produced by heritage experts, the tourism industry, and the public (i.e., UGC).

IDNs provide a means of mitigating some of these challenges with presenting cultural heritage and moves closer towards creating shared heritage. Since heritage is socially constructed by multiple people, not only by individual experts, it should be open to participation from the public. Thus, to further democratise cultural heritage narratives, rather than providing a top-down approach to cultural heritage, the bottom-up approach of examining UCG, identifying tourists’ interests based on industry-produced content, and expert-created content should be considered for inclusion in an IDN. IDNs present an opportunity to increase the breadth of the social groups interested in heritage, the types of histories (e.g., different social groups) that are shared in the digital space, and for evolving interpretations and public contributions to cultural heritage narratives. The process of socially constructing cultural heritage narratives raises the narrative paradox where authorial control through the narrative structure (top-down) needs to be balanced with providing IDN users the agency to experience and produce different emergent narratives (bottom-up). Therefore, the above context of media divergence, increasingly participatory digital cultures who are producing multi-perspective narratives through social media, and the challenges of IDN design in the non-fiction genre of cultural heritage led the research question of this thesis.

1.6 Research Question & Hypotheses

The research question addressed in this thesis is: How can a transdisciplinary approach expand IDN theory into a framework that can be applied to create and evaluate multimodal, participatory narratives in non-fiction genres?

This research question is associated with the following three hypotheses that emerged from the real-world challenge of navigating through cross-media tourism content, interactive digital narrative design, and the challenges of incorporating digital narratives into the cultural heritage sector:
- **Hypothesis 1**: There are informational gaps between the cultural heritage tourism content produced by the tourism industry, subject-matter experts, and the public.
- **Hypothesis 2**: An emergent (i.e., non-linear) narrative structure can be applied to the non-fiction context of cultural heritage tourism to mitigate the issue of the narrative paradox.
- **Hypothesis 3**: An IDN on cultural heritage tourism can persuade members of the public to take further participatory action\(^\text{12}\) beyond their interaction with the narrative system.

The research question, as applied to the non-fiction genre of cultural heritage tourism, aims to advance IDN theory and contribute to the creative practice of developing purposeful non-fiction IDNs that result in persuasion. It fills the gap in existing IDN studies by providing a theoretical creation framework for remixing multimodal content sources and an evaluation model for determining the IDN’s rhetorical impact on the audience. This theory expansion was tested and exemplified through practice-based research on a case study.\(^\text{13}\) Practice-based research involves producing a creative artefact accompanied by a critical discussion of its significance and contribution to knowledge (Skains, 2018, para 11). An IDN prototype on the case study of the 11 UNESCO World Heritage Australian Convict Sites was created to serve as a proof of concept that the expanded IDN theory is practically applicable to non-fiction IDN creation.

### 1.6.1 Case Study Rationale: 11 UNESCO World Heritage Australian Convict Sites

Investigating how an IDN could be tailored to the needs and interests of cultural heritage tourists required identifying locations that fit within the existing broad definitions of cultural heritage. The UNESCO World Heritage Sites were chosen as the application for this practice-based research for a variety of reasons. Firstly, they are recognised as culturally significant to the world rather than a single culture and therefore allow for multiple perspectives and the construction of shared heritage.

---

\(^{12}\) Examples of further participatory action are to share the IDN with their friends/family/colleagues via social media or travel to one of the sites. These are discussed in detail in Chapter 6.

\(^{13}\) A case study is “a detailed account giving information about the development of a person, group, or thing, especially in order to show general principles” (“Case study”, n.d.).
Secondly, their designation involves a rigorous selection process based on a set of criteria and UNESCO, being a world-recognised organisation, provides a common frame of reference to situate cultural heritage as a concept. At the time the case study was selected, there were 1072 designated UNESCO World Heritage Sites, of which 832 were categorised as cultural, 206 as natural, and 35 as mixed (UNESCO, 2017). The options were further narrowed to only the cultural sites because natural sites present fewer opportunities for narrative development. The list of cultural sites was reduced to those with some tourism infrastructure to ensure that UGC exists and to the sites where the majority of content is available in the English-language (due to the limitations of the researcher). Sites significant in the areas of religion, architecture, manufacturing/heavy industry, and archaeology were eliminated. These topics would require additional specialist knowledge to comprehend fully and would also add too many potential confounding variables for consideration (e.g., controversies, political correctness, unknowns, etc.), which could overshadow the goals of the IDN study. After applying these selection criteria and doing preliminary research on the amount of existing content produced by the tourism industry, experts in related fields, and Internet users, the 11 UNESCO Australian Convict Sites were selected.

This case study actually consists of 11 smaller case studies connected by the central theme of convict transportation, which provides enough cross-media cultural content to analyse. This more recent history (1788-1868) presents opportunities for vested personal interest by the public today who may have ancestors who were transported or went as free immigrants to Australia. The history offers many lesser-explored perspectives (e.g., Indigenous Australians, forced labour, female imprisonment) and it impacted Australian national identity. For example, it was referred to by some in certain contexts as “the convict stain” (Lambert, 2002; Tranter & Donoghue, 2003; Smith, 2011). Thus, there is immense narrative potential for exploration to allow for the creation of different emergent narratives according to user interests. The 11 UNESCO World Heritage Australian Convict Sites include four sites located in New South Wales—Hyde Park Barracks, Cockatoo Island, Old Government House, and Old Great North Road; five in Tasmania—Port Arthur Historic Site, Port Jackson, Port Arthur, Port Arthur, Port Arthur, Port Arthur.

14 Confounding variables (a term often used in psychology studies) refers to factors outside the independent variable(s) being studied that may influence or cause a certain result. In an experiment, “confounding makes it impossible to differentiate that variable’s effects in isolation from its effects in conjunction with other variables” (APA Dictionary, 2020).
Cascades Female Factory, Coal Mines Historic Site, Brickendon and Woolmers Estates\textsuperscript{15} and Darlington Probation Station; one located in Perth—Fremantle Prison; and one on Norfolk Island—Kingston and Arthur’s Vale Historic Area (KAVHA) (see Image 1).

**Image 1. UNESCO World Heritage Australian Convict Sites Screenshot from Klynt**

1.7 Research Objectives

The research question and the hypotheses are addressed through the following objectives:

1. Develop and expand Koenitz et al.’s (2013) IDN theory;
2. Identify the unique interests of cultural heritage tourists to identify possible narrative topics for an IDN prototype on the UNESCO World Heritage Australian Convict Sites;
3. Conduct a multimodal discourse analysis\textsuperscript{16} to compare content produced by the tourism industry, subject-matter experts, and the public to identify possible gaps;

\textsuperscript{15} The Brickendon and Woolmers Estates is officially recognised as one historical site by UNESCO, but they are sometimes referred to separately because they are two different estates that are independently managed.

\textsuperscript{16} Multimodal discourse analysis is “a relatively new set of concepts and approaches that extend the study of language to combine interpretation of the construction of meaning with the other phenomena that materialise within a communication structure, such as image, music, gesture, symbols and, increasingly multimodal analysis annotation” (Krisjanous, 2016, p. 342).
4. Employ an emergent narrative structure through a prototyped IDN system to test its applicability as a suitable method for creating IDNs for cultural heritage topics; and
5. Gather qualitative and quantitative user feedback to determine whether: a narrative was communicated, the desired level of agency was achieved, and whether the user was inspired to take further action.

Secondarily, this research also aims to inform memory institutions on cultural heritage tourists’ interests and preferences when interacting with digital content, and to exemplify transdisciplinary research methodologies.

1.8 Thesis Overview

The research objectives are addressed in the following six chapters. Chapter 2 discusses the affordances and limitations of digital media in an analytical overview of the historical development of popular IDN genres. Chapter 3 shows how a transdisciplinary approach can provide an overarching theoretical framework for non-fiction IDN creation and evaluation. The remaining chapters detail a series of methods and results in researching, creating, and evaluating the IDN prototype on the 11 UNESCO World Heritage Australian Convict Sites. Chapter 4 details the process of determining the demographics and interests of cultural heritage tourists—the target audience for the IDN. Chapter 5 covers the mixed methodologies used to gather and analyse multimodal content from the three corpora (e.g., tourism industry, expert/archives, and UGC), and the results formed the content model for the narrative topics/paths for the IDN. Chapter 6 discusses the creative decisions made based on the theoretical creation framework developed in Chapter 3 and the findings from the user experience testing done with two groups, namely selected experts and members of the public. Finally, Chapter 7 concludes with a summary of the thesis’ findings, contributions, and suggestions for areas of future research on IDN applications.
Chapter 2: Narratives in Digital Media

As introduced in the previous chapter, a series of factors have, over time, come to influence the creation and reception of narratives in digital media. As new digital technologies began to emerge, the methods of narrative creation changed and what began with the remediation of print conventions evolved into new genres that utilised the affordances of digital media. This chapter reviews the current state of research in interactive digital narrative (IDN) and highlights the gaps that can be filled with an expansion of the existing theory. Firstly, section 2.1 discusses how concepts from media theory apply to cultural heritage and provides the context for how digital narratives have evolved from print predecessors. Then section 2.2 gives an overview of academic debates on the terminology and disciplinary approaches have contributed to IDN research. This thesis borrows from narratology which provides specific methods for narrative analysis and ludology which has produced theories, approaches, and authoring tools (i.e., software) for creating IDNs. Section 2.3 brings these concepts together into a proposed move towards a transdisciplinary understanding of the different IDN genres that fall within this diverse area of study. Continuing with this synthesis, selected IDN genres, namely hypertext fiction, transmedia storytelling, and alternative reality games are discussed to show the development towards more complex narrative systems and highlight the genre conventions and limitations. As most IDN research to date has focused on fiction, section 2.4 outlines this gap and discusses interactive documentaries as a popular non-fiction IDN genre. Finally, section 2.5 discusses the current trends in digital cultural heritage narrative products—virtual museums, serious games, participatory public projects, and interactive documentaries—and highlights the narrative gaps that need to be filled by drawing from the strengths of the aforementioned genres.

2.1 Remediation in Digital Narratives

Understanding how narratives have changed and been impacted by digital media, firstly requires a clarification of terms. Many media-related terms have been used interchangeably within and outside of academia, and the distinction between medium and mode are foundational to the study of IDNs. The medium is the delivery method of a narrative – such as printed novels, websites or film – and includes “the
material resources used in the production of semiotic products” (Kress & van Leeuwen, 2001, p. 22) or in other words, the hardware and software used to deliver the narrative. Modes are the “semiotic resources which allow the simultaneous realisation of discourses and types of (inter)action” (Kress & van Leeuwen, 2001, p. 21), such as text, video, or oral speech. The medium is the channel through which modalities of communication are applied and multimodality is widely understood to mean a combination of modes (Dena, 2010). The term multimedia is often used interchangeably with multimodality in older scholarly literature and outside of academia in the creative industries, however, multimedia actually refers to the transmission channel or specific technology (i.e., medium) used to deliver the communication (e.g., paper, camera, television, computer screen). Further clarifying the use of these terms, Lauer’s (2009) survey of scholarly literature showed that older definitions of multimedia ignored the role of the user and focused on the authorial choices in the text’s composition; and more recent definitions of multimedia are in fact multimodal because rather than referring to communications that combine various media, they are combining a variety of modes disseminated through a single medium (p. 229). The term multimodality may not be as prevalent in the literature as multimedia once was because scholars also use terms, such as new media and digital media instead of multimedia. However, multimodality is generally the preferred term for scholars of rhetoric and composition, and multimedia is used by non-academics and industry (Lauer, 2009, p. 231). Thus, the terminology applied in this thesis in the discussion of digital narratives are medium (plural: media) and mode (plural: multimodality) (also see Glossary for definitions).

When narrative moves into different media, it often borrows or remediates the conventions of previously existing media. Remediation is “the representation of one medium in another” and it is a defining characteristic digital media (Bolter & Grusin, 1999, p. 45). For example, remediation includes digitised versions of paintings and collections of literary texts (Bolter & Grusin, 1999, p. 45). Remediation has occurred in the evolution of many narrative genres, including plays, movies and TV. The methods of storytelling evolve with the medium, often starting as remediation and then growing into something uniquely expressive in the new medium. For example, what began as photoplays evolved into a new genre now recognised as film (Murray, 2015). The technique of “breaking the fourth wall,” first appeared in fifteenth century plays
when the actor would speak directly to the audience, it became more sophisticated when Shakespeare applied it as a soliloquy, and it is now seen in reality TV in the form of speaking into “confession cams” (Murray, 2015). Another instance of narrative remediation is the concept of intertextuality in print narratives, which evolved into hypertextuality in digital narratives. Intertextuality is “a relationship of co-presence between two texts or among several texts” (Genette, 1997, p. 1). For example, intertextuality exists between Joyce’s Ulysses and Homer’s Odyssey where the title of each chapter of Ulysses, published one at a time, was related to an episode from the Odyssey (Genette, 1997, p. 3). In this case, the Odyssey is a hypotext because it is an earlier text that holds a relation to the later text, Ulysses—the hypertext (Genette, 1997, p. 5). Thus, a hypertext by Genette’s (1997) definition is “any text derived from a previous text either through simple transformation or imitation” (p. 7). In digital media, hypertext is the connection or link between two related texts (e.g., different web pages), and hypermedia refers to links between different modalities (e.g., graphics, audio, video, etc.). Bolter and Grusin’s (1999) concept of remediation motivated the narrative turn, which Ryan (2013) describes as the shift of narratologists’ focus from literary fiction to other types of narrative (e.g., comics, paintings, photography, television, dance, and music). Therefore, while digital media has inspired new creative narrative techniques, many conventions stem from, build upon, or remediate previous narrative traditions/genres.

Digital remediation often has one of two goals: either to erase the presence of the digital medium (make it transparent) or to use the digital medium to enhance a communication/text/work (Bolter & Grusin, 1999, p. 46). For example, virtual reality tries to immerse the viewer into the digital world to the point where they cannot “feel/see” the digital medium. On the other hand, digital encyclopaedias use the digital medium to improve upon the functionality of printed editions because they facilitate keyword search and may include other modalities, like sound and video, to enhance the user’s understanding of a concept (Bolter & Grusin, 1999, p. 46). However, digital encyclopaedias, like other digital texts, still remediate the printed form because “they are presenting discrete, alphabetized articles on technical subjects, [and] they are still

---

17 Transformation occurs, for example, in Ulysses which transposes the action from the Odyssey onto twentieth century Dublin (Genette, 1997, p. 5).
18 An example of imitation would be following the same model or formula of another novel (Genette, 1997, p. 6).
19 Hypermedia is an example of a widely accepted term that confuses the definition of media with mode. Hypermedia refers to links to different modes or types of semiotic communications.
recognizably in the tradition of the printed encyclopaedia since the eighteenth-century” (Bolter & Grusin, 1999, p. 46). Similarly, the World Wide Web (WWW) also remediates older forms; “its point-and-click interface allows the developer to reorganize [sic] texts and images taken from books, magazines, film, or television, but the reorganization [sic] does not call into question the character of a text or the status of an image” (Bolter & Grusin, 1999, p. 46). The goal of this thesis is to enhance interactive digital narratives through the medium of the WWW—“[a] potentially unruly medium that gives its audience more choices over the content presented” (Bolter & Grusin, 1999, p. 224). The WWW is a medium where multiple modalities converge and previously established narrative techniques are remediated. Bolter and Grusin (1999) argue, convergence is remediation under another name and that “convergence is often misunderstood to mean a single solution, but in fact, as these technologies appear, they remEDIATE each other” so in the end, “convergence means greater diversity for digital technologies in our culture” (p. 224-225). These increased choices are an affordance of the digital medium that need to be considered and optimised to enhance non-fiction IDNs rather than merely remediate genre conventions carried over from printed narratives.

2.1.1 Immersion and Interactivity in Digital Media

The nature of narrative has changed in digital media, and its affordances are considered throughout this thesis in relation to the analysis and creation of IDNs. The four affordances of the digital medium, identified by Murray (1997), are procedural, participatory, spatial, and encyclopaedic (p. 71). Digital environments are procedural because they exhibit rule-based behaviour, participatory because they are responsive to human input, spatial because they present space that can be virtually moved through rather than just described or pictured, and encyclopaedic because computers offer the promise of “infinite resources” (Murray, 1997, p. 83). The spatial and encyclopaedic affordances of digital environments make up its immersive nature, and the procedural and participatory affordances make up its interactive nature (Murray, 1997, p. 71). Immersion and interactivity are key terms often used in the context of IDN research. The experience of immersion is “produced by the pleasurable exploration of a

20 The term affordance – introduced by psychologist James Gibson (1977) – describes a set of potential actions held by a physical object (as cited in Rosinki & Squire, 2009, p. 155).
21 The concept of immersion is derived from the metaphor of the sensation of being submerged in water and surrounded by a different reality that takes over our attention (Murray, 1997, p. 98).
limitless, consistent, familiar yet surprising environment” (Murray, 1997, p. 102). Immersion occurs in digital environments when they captivate and hold “our interest because it feels expansive, detailed, and complete” (Murray, 2012, p. 102). Immersion can be enhanced “by increasing scope, detail, and consistency while establishing clear boundaries and means of navigation” (Murray, 2012, p. 102). Interaction involves “related behaviour between two entities that are acting upon one another usually through a common medium or some shared or transferred artifact [sic]” (Murray, 2012, p. 426). Considering that interactive digital narratives are described by the term interactive, further clarification is needed on it use and definition.

When used as a design term, interactivity is often widely generalised to mean activity (Murray, n.d.), but in digital environments, interactivity produces the pleasurable feeling of agency. Agency “is often confused with the mere ability to move a joystick or click on a mouse. But activity alone is not agency” (Murray, 1997, p. 128); it is “the satisfying power to take meaningful action and see the results of our decisions and choices” (Murray, 1997, p. 126). The first characteristic of pleasure in the user experience is immersion and the second is agency (Murray, 1997, p. 126). In IDNs, users experience dramatic agency, which is best exemplified in video games where players make choices that impact the gameplay. Providing users with opportunities to experience dramatic agency raises two main challenges in the IDN authoring process. Firstly, the narrative paradox is a challenge because providing interaction questions authorial control and as Toolan (2010) argues, “you cannot have art (here, literary narrative art) without the control of the author” (p. 137-138). When the narrative paradox becomes an issue, it can result in the negative experience of ludonarrative dissonance where the user/player’s interaction does not correspond with the narrative. Secondly, the rise of participatory digital cultures has resulted in a situation where users “feel more enabled, more able to cut, paste, and compose, than ever before—especially where the creator invites them so to do” (Toolan, 2010, p. 137). Participatory culture has low barriers to artistic expression and civic engagement, strong support for creating and sharing personal creations, and members who believe their contributions matter and who feel some degree of social connection with one another (Jenkins et al., 2006, p. 3). Participatory culture has resulted in productions

---

22 Dramatic agency is “the experience of agency within a procedural and participatory environment that makes use of compelling story elements” (Murray, n.d.).
and these “new-tech multimodal narratives remove multiple constraints and allow the consumer to co-create, they amount to a distinct cultural form, different from traditional narrative art” (Toolan, 2010, p. 137). These challenges to IDN creation are elaborated upon in the following sections by drawing from narratology, ludology, and media studies because they contribute to the expansion of IDN theory in Chapter 3.

2.2 The Evolving Study of Narrative

The significance of the term narrative is further explained in narratology because it is intentionally differentiated from the term story and helps specify the nature of this thesis research. Neither narrative or story has a single universally-accepted definition. Beginning with the story, Stein (1982) explains that “the distinguishing characteristic of stories, as opposed to narratives, is that the story must produce some type of affective arousal in the reader, along with a resolution (or decrease) of the initial arousal state” (p. 489). The function of storytelling was historically to preserve the culture of a civilization through the carefully constructed series of events that were influential to the evolution of the society (Stein, 1982, p. 489). Stories commonly follow an arc with rising action, a climax, and a resolution. Ryan (n.d.) says that a story must have (1) a world populated by individual agents and objects, (2) a world that undergoes not fully predictable changes of state caused by physical events, and (3) physical events that must be associated with mental states and events (goals, plans, emotions) (p. 3). On the other hand, narrative is commonly used in academic discussions and multiple definitions have been applied across disciplines. The narrative status of a text is “a theoretical question that enables narratologists to delimit the object of their discipline, to isolate the features relevant to their inquiry” (Ryan, 2007, p. 28). Narrative has a long history of study by narratologists who have investigated multiple aspects and debated many concepts and common issues in narratives.

Although a single definition of narratology does not exist in literary studies, particularly in the wake of narratology’s many expansions (Heinen & Sommer, 2009, p. 194), it can be understood as “a humanities discipline dedicated to the study of the logic, principles, and practices of narrative representation” (Meister, 2013, para 2). Narratology provides ways to differentiate and classify narrative texts based on narrative technique, pragmatics, and semantic content (Ryan, 1992). The two main
traditions of narratology are classical and postclassical. Classical narratology (also known as Structuralism or Formalism) “seeks to identify the underlying rules—the codes and conventions—of the various domains of meaning-making” (Scholes et al., 2006, p. 287). Postclassical narratology emerged in the 1980s extending classical to investigate the relationship between narrative structure, the semiotic form, and their interaction with the real world (Prince, 2008, p. 116). Postclassical narratology examines the function, meaning, production, and history of narratives (Prince, 2008, p. 116). It introduced new methodologies, research hypotheses, and perspectives on the forms and functions of narrative (Alber & Hansen, 2014, p. 1), which are discussed further in Chapter 3. The seminal narratological theories and concepts emerged from schools of thought in Russia (e.g., Shklovsky, 1929; Bal, 1990), Germany (e.g., Iser, 1972; Ingarden, 1973; Stanzel, 1986; Lambert, 1998), France (e.g., Genette, 1972; Lévi-Strauss, 1963; Barthes, 1977; Rimmon-Kenan, 1983), and America (e.g., Booth, 1961; Chatman, 1978) (see Appendix 1 – Branches of Narratology Overview). German narratology focuses on typology, the narrator and reader as separate fields of study, and the act of reading studied in the field of hermeneutics (Darby, 2001, p. 832-837). The Anglophone tradition considers both authorship and the reader (Darby, 2001, p. 836). The French formalists distinguish between “the what and how of narrative, which they labelled story (récit) and discourse (discours)” (Scholes et al., 2006, p. 288). The foundational components used by many narratologists for narrative analysis are story, fabula, discours and sjužhet, which were summarised and translated into English by Mani (2013) (see Table 1). Overall, Ryan (n.d.) summarizes that narratology involves three different semiotic domains: semantics (the study of plot/story/fabula), syntax (the study of discourse/sjužhet/narrative techniques), and pragmatics (the study of the uses of narrative) (p. 11). Visualising this, Aarseth’s (2012) model of classical narratology summarises the different parts of narrative studied by narratologists (see Figure 2).
Table 1. Parallel Narratological Terms Across Schools of Thought (as cited in Mani, 2013, p. 5)

<table>
<thead>
<tr>
<th>French Structuralism</th>
<th>Anglo-American New Criticism</th>
<th>Russian Formalism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Récit Historie</td>
<td>Story - “the content of a narrative, namely, &quot;the chain of events (actions, happenings), plus what may be called the existents (characters, items of setting)” (Chatman, 1980)</td>
<td>Fabula - “raw materials of the story” (Martin, 1986)</td>
</tr>
<tr>
<td>Discours</td>
<td>Discourse - “is the narrative’s expression, ‘the means by which the content is communicated’” (Chatman, 1980)</td>
<td>Sjuzhet - “the narrative as told or written – incorporating[ing] the procedures, emphases, and thematic devices of the literary text” (Martin, 1986)</td>
</tr>
</tbody>
</table>

Figure 2. Aarseth's (2012) Model of Classical Narratology

This thesis focuses on the examination of narrative discourse in digital media in the context of cultural heritage tourism and therefore aligns more closely with post-classical narratology. Post-classical definitions and investigations of narrative are less formal, more exploratory, interdisciplinary, experimental, empirical and hybrid (Prince, 2008, p. 117). Most new narratologies have resulted from modifications, elaborations, and applications of previous models, or they have emerged from interdisciplinary collaborations (Nünning, 2004, p. 355). Nünning (2004) argues that with all the new approaches to the study of narrative, narratology is no longer a single discipline (p. 354). However, few scholars fully engage with other disciplines because narratologists tend to focus on narrativity in a general way and other researchers are interested in narrative for a wider variety of reasons. Narratology’s roots in literary
studies and fiction require modification for non-fiction narrative analysis and narratologists often lack connections to disciplines engaged in empirical research (Heinen & Sommer, 2009, p. 2). Therefore, “narratology is not required to come up with a ‘master theory’ which accounts for all things narrative” (Heinen & Sommer, 2009, p. 4); instead, it can be used and applied in other disciplines, which is what this thesis does. Narrative is increasingly being studied by scholars from psychology, marketing, ludology, anthropology and artificial intelligence, among others (Heinen & Sommer, 2009). There are also several specific applications of postclassical narratology, namely cognitive/natural, communicative, contextual, cultural, feminist, rhetorical, transmedial, and unnatural (Prince, 2008).

As mentioned in Chapter 1 of this thesis, scholars studying IDNs have adopted Herman’s (2002) cognitive-based definition of narrative as a “forgiving, flexible cognitive frame for constructing, communicating, and reconstructing mentally projected worlds” (p. 49) because it media independent and allows for experimentation in different IDN forms (Koenitz, 2010, p. 178). This looser definition of narrative aligns with Ryan’s (n.d.) definition of narrativity which accounts for the fact that many postmodern texts are presented as narrative, but do not allow the reader to reconstruct a complete narrative script or story arc (p. 5). Ryan (n.d.) explains that narrative is where the receiver recognises the authorial intent that leads to the judgement that the work is a narrative, and narrativity is the evocation of a script regardless of the author’s intent and whether there even is an author. Examples of works that have narrativity are paintings, relics, theme parks, and websites because they can tell a “story” and a viewer can gain meaning that may not have been intended by the creator (Ryan, n.d.). As narrative is expanded into different disciplines, it opened up the field of narratology to transdisciplinary integration in this thesis, but it also resulted in a decade-long debate among scholars known as the “narratology versus ludology debate” on the design and reception of narrative.

### 2.2.2 Narratology versus Ludology

The debate between narratologists and ludologists stemmed from the growing pains of computer games as a new academic field in 2001. The situation was, Aarseth (2012) argues, actually two debates: one on “the design-oriented discussion of the
potential and failings of game-based narratives,\textsuperscript{24} and the other on whether games are stories. The former part of the debate being partly speculative and critical, and the latter being descriptive and theoretical (Aarseth, 2012, p. 130). Regarding the theoretical part of the debate, Aarseth (2012) argues that narratives and games share four common elements, which are: a world, agents, objects, and events (p. 130). Aarseth’s (2012) ludonarrative approach recognises that every game and narrative configure these four elements differently based on many different variables, which are listed in his Game Variables Analysis Model (see Figure 3). In Aarseth’s (2012) model, the narrative pole is rigid and fully plotted, and the ludic pole is flexible and open-ended. The issues and scholarly debates arose from the fact that some narratives have ludic elements and some games contain narrative.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure3.png}
\caption{Game Variables Analysis Model (Aarseth, 2012, p. 130)}
\end{figure}

Regarding the design part of the narratology-ludology debate, interactive narratives require two conflicting requirements, a coherent narrative and user agency (Chen, 2014, p. 131). The concept of ludonarrative dissonance was first used by game designer, Clint Hocking, in his review of the video game \textit{Bioshock} (2007) to describe the feeling of detachment the players experience between their actions and the story (Hocking, 2007). Hocking (2007) explains that \textit{Bioshock} (2007) cannot be enjoyed as

\textsuperscript{24} Aarseth (2012) explains that games in this debate often refers to complex software programs of “integrated cross-media packages” that can emulate any medium, such as film, text, graphic novel, etc. rather than other game formats like tabletop or live action role-playing (p. 130).
a story because its ludic structure works in opposition to its narrative structure and thus “destroys the player’s ability to feel connected to either” (para 4). The term ludonarrative dissonance suggested that game developers should strive to reach a ludonarrative harmony (Seraphine, n.d., p. 5). Ludonarrative harmony refers to the “successful syncing of both ludic and narrative aspects to build a consistent, immersive experience” (Roth, van Neuenen & Koenitz, 2018, p. 4). In an effort to achieve ludonarrative harmony and avoid dissonance, game developers came up with three design methods. The first strategy was to “abandon creating games where players will experience a story” and focus on emergent gameplay in a world where anything could happen (Seraphine, n.d., p. 5). The second strategy was to create more interconnections between the ludic and narrative structure, and the third was to purposefully use ludonarrative dissonance to cause players to feel discomfort (e.g., as seen in The Sims, Eternal Darkness: Sanity’s Requiem, and Metal Gear Solid 2: Sons of Liberty) (Seraphine, n.d., p. 5-8). The concept of emergent narrative was introduced by Aylett (1999) as a credible solution to the narrative paradox or the “contradictions between an autonomous user, free to move in a virtual world, and the desire to convey a satisfying coherent plot structure” (Louchart et al., 2008, p. 273). Emergent narratives create “an experience for the user” as a result of their participatory interaction in the narrative rather than as a spectacle because “a narrative spectacle requires a beginning, a middle and an end in the form of a climax in order to achieve satisfaction for the spectator”—or what is often defined as a story (Louchart & Aylett, 2003, p. 244). Emergent narratives create a satisfying experience that capitalises on the entertainment values of discovery, interaction and immersion (Louchart & Aylett, 2003, p. 244) rather than a linear story.

Emergent narratives rely on a flexible shape instead of fixed predetermined plots, but they also need boundaries to help define a topic, scenario, and message (Louchart et al., 2008, p. 277). Emergent narratives are often implemented using artificial intelligence, rule-based interactions, and intelligent agents (Schoenau-Fog et al., 2013, p. 5). Emergent digital narratives are exemplified in Role Playing Games where each character develops its own story through interactions with other characters, non-player characters (i.e., bots), or challenges proposed by the Game Master who dynamically reacts to the player’s choices in the gameplay (Louchart & Aylett, 2003, p. 246). Other examples of emergent narratives in video games, include Façade,
Scenejo, and Fear Not!, which allow the user to intervene and communicate with characters to change the course of the generated fictional story (Schoenau-Fog et al., 2013, p. 5). In a move to formalise the creation of emergent narratives, Schoenau-Fog et al. (2013) proposed an Interactive Dramatic Experience Model (IDEM) to provide authors with a method of planning and structuring events in a way that guarantees a theme is communicated while allowing users to experience navigational freedom in a virtual environment (p. 6). The IDEM model builds on a playwriting technique, where a “completed plot in a play represents the whole action, and the potential of a play is formulated from a set of possibilities available to the author or playwright” (Schoenau-Fog et al., 2013, p. 6). They describe the plot structure as progressive because it moves ahead in one direction, albeit with branching options directing the story structure, and a Drama Manager organises and triggers specific events depending on the executed actions and navigational choices made by the interactive subjects (Schoenau-Fog et al., 2013, p. 7-13). Since the author develops predetermined content/event nodes for the narrative structure to maintain a dramatic arc, it achieves ludonarrative harmony. Schoenau-Fog et al. (2013) detailed and tested one narrative structure (i.e., the IDEM) for IDNs and other scholars have proposed authoring methods for alternate reality games (Gouveia, 2009), collaborative two-player video games (Roth, van Nuenen, & Koenitz, 2018), but there are even more possibilities for emergent narrative design. For example, Hargood, Jewell and Millard (2012) proposed an authoring technique, which they termed a narrative braid for adaptive documentaries, to describe similar video segments based on a certain subject matter that form one potential story, which can be connected to other related segments forming other potential story paths, and all the story paths can be braided together under a larger theme. Summarising these significant challenges in IDN design (i.e., balancing the narrative paradox to avoid ludonarrative dissonance and achieve ludonarrative harmony), Roth et al. (2018) state that the disturbance in the interactive narrative experience is caused by an unbridgeable distance between the interactors’ expectations and what is imposed or desired by the creator (p. 11).

To date, the undesirable experience of ludonarrative dissonance does not explicitly explain the dissonance a person experienced and it can be easily misinterpreted (Roth et al., 2018, p. 11-12). In order to better understand IDN design failures, as Roth et al. (2018) argue that the next challenge for IDN researchers is
explaining the actual dissonances that can occur. The dissonances occur because the
collection of narrative is connected to our meaning-making and this requires a
cognitive perspective in future analyses because narrative interpretation can be situated
on several dimensions of the whole ludonarrative experience (Roth et al., 2018, p. 12).
Murray (2005) called for an end to the narratology-ludology debate and argued that
most ludologists (or “computer game formalists”) are actually trained in narratology,
and they have rebelled “in order for their own interpretation to have meaning” and thus
the argument can never be resolved because, in fact, narratologists are defending both
sides (para. 7-8). Murray (2005) notes that the “proper study of games” is an analysis
of formal properties of the genre (e.g., game mechanics) and comparative studies of
particular games for their qualities has become associated with “ludology” and
encompasses the ideology that games should only be studied in “their own class” (or
genre). However, as Aarseth (2012) also argued, some games have story elements and
some stories have game elements and genres are not necessarily mutually exclusive.
Narratologists developed tools and techniques to study and compare narratives and
ludologists have done the same for games. In the end, the debate highlighted the design
challenges, and that different genres of IDNs contain varying levels of narrative and
interactivity. As Murray (2005) summarises, “game studies, like any organized [sic]
pursuit of knowledge, is not a zero-sum team contest, but a multidimensional, open-ended puzzle that we are all engaged in cooperatively solving” (para. 8). The study of
IDNs can, in other words, benefit from the perspective of scholars from multiple
different disciplines.

Although the narratology-ludology debate polarised the disciplines and methods
of study, a ludonarrative approach can recognise the intersection of narrative and game
elements in a single work rather than dealing with these aspects individually as seen
in Aarseth’s (2012) Game Variables Analysis Model (see Figure 3). The narrative and
ludic poles can be considered in a “ludonarrative continuum” on which different IDNs
could fit depending on how the variables listed in Aarseth’s (2012) model manifest
(see Figure 4). There are many different IDN genres with different combinations of
narrative and ludic variables. For example, a printed book such as a CYOA novel (as
an IDN predecessor) would sit closer to the narrative pole, a video game would be
nearer to the ludic pole, and other genres could sit somewhere in between. For instance,
interactive fiction would sit closer to the narrative pole because it offers consumers
limited choices or a lower level of agency compared to other formats; transmedia storytelling would sit near the middle of the continuum as they have multiple individual narrative structures, but the storyworld can continue to expand into different media/genres based on the level of audience participation; and alternate reality games would sit closer to the ludic pole considering its complex narrative structure and the player agency required to produce the emergent narrative (Dena, 2010, p. 193). Theoretically, each unique IDN would sit in a different place along the continuum depending on the nature of its design.

Figure 4. The Ludonarrative Continuum

<table>
<thead>
<tr>
<th>Narrative pole</th>
<th>Ludic pole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed book</td>
<td>Augmented Reality Games</td>
</tr>
<tr>
<td>Interactive Fiction</td>
<td>Video Games</td>
</tr>
<tr>
<td>Transmedia Storytelling</td>
<td></td>
</tr>
</tbody>
</table>

2.2.3 A Ludonarrative Toolkit

The above-mentioned societal context of remediation across narrative genres, the affordances of digital media, and the concepts and approaches contributed by narratology and ludology provide the foundations for a transdisciplinary synthesis to aid the analysis of existing IDNs. Postclassical approaches to narratology moved towards new media and genres, and prioritised the application of the tools of narratological analysis over developing a grammar of narrative (Alber & Hansen, 2014, p. 1). The metaphorical narratological toolbox is a concept used by many narratologists to describe different categories and concepts of narrative analysis (Dawson, 2017). The narratological toolbox has been refined when existing tools do not work for new narratives encountered and when new tools are needed to expand the study across a range of media and to other critical practices (Dawson, 2017, p. 229-230). Thus, the narratological toolbox can be built upon for its application to the analysis if IDNs.

When analysing IDNs, it is important to ask questions, such as what is the narrative potential of the media and modalities employed, how can the narrative affordances of a given medium be emulated in another medium, and what can the narratives in a particular medium do that others cannot (Ryan, 2016, p. 2)? Different
media have different affordances and limitations, and media are selected for their affordances (Ryan, 2005, p. 11). A narrative can take full advantage of its medium, ignore its specificities by using it purely as a transmission channel, fight some of the medium’s properties for expressive purposes, or expose latent properties and expand the expressive potential (Ryan, 2005, p. 13). These media-centred questions are applied to IDNs through an evaluation model, namely a Ludonarrative Toolkit. This toolkit takes a postclassical narratological approach to analysing IDNs by drawing upon Murray’s (1997) four affordances of digital media – discussed earlier in this chapter – as the guiding framework. IDNs are spatial because they present spaces that can be virtually moved through rather than being described or pictured, encyclopaedic because computers offer “infinite resources” for narrative content, procedural because they exhibit rule-based behaviour, and participatory because they are responsive to human input (Murray, 1997, p. 83). Under the spatiality affordance are concepts from media studies, under the encyclopaedic affordance are ludonarrative qualities, the procedural affordances concerns the narrative structure, and participatory affordance is informed by the level of interactivity provided.

Spatiality in IDNs is examined through the interface design of each IDN in terms of the aesthetics, how multimodal content is incorporated, and the functionality of the navigation. The aesthetics in the interface design include elements like the layout, colour usage, and the types of content used. Digital media offer more modality choices and there need to be considerations for which mode and on which occasions should they be used because each mode can carry a part of the message for which it is best equipped (Kress, 2003, p. 117). IDN navigation can be analysed in terms of how intuitive it is, whether there are any missing hyperlinks, and how it impacts the communication of the narrative (e. g., whether ludonarrative dissonance occurs).

The encyclopaedic affordance of IDNs can be analysed in terms of the size of the narrative scope, by drawing upon Aarseth’s (2012) Game Variables Analysis Model, the inclusion of hyperlinks to external content, and/or calls to action for further participation from produsers through in-person or social media contributions. Interactivity is often examined in games rather than narratives, but IDNs are developing into many different genres, which call for a ludonarrative analysis that factors in the affordance of interactivity that digital environments provide. Aarseth
(2012) invited scholars to test the common game variables he identified and thus, they are applied in this thesis as narratological tools to analyse IDNs.

The procedural affordance will be examined through the underlying structure, which is a function of the narrative potential of an interactive text (Ryan 2015). Ryan (2015) highlights nine possible narrative structures (see Image 2) and explains the procedural nature of these common narrative structures as follows:

- the Complete Graph with every node linked to one another allows for total freedom in navigation;
- Network provides many options for movements that are link-dependent;
- Maze is similar to a network, but offers one or more exits;
- Tree presents multiple branches that are isolated and linear;
- Vector preserves linearity with optional side branches;
- Flowchart has a horizontal progression along a chronological sequence with branches that lead to one or multiple different endings;
- Hidden Story has two narrative levels, one level is fixed, unilinear and consists of temporally directed events and the other is an atemporal network of choices;
- Braided Plot allows for many variations by providing a sequence of physical events from different perspectives that connect at certain points; and
- Action Space prioritises interactivity and provides the general outline of a plot so the user can make decisions for its realisation (Ryan, 2015, p. 166-175).

Although these narrative structures are not the only possibilities,\textsuperscript{25} they represent a collection of frequently-used options in different media and could be used as prototypes for future IDN design. These structures allow for a conceptual understanding of how an IDN communicates the intended narrative or if narrativity is conveyed through the procedural actions taken by the users. The structures are not exclusive to specific genres but are commonly applied to and identifiable in many IDN genres.

\textsuperscript{25} For example, other narrative models have been identified by Koenitz, Di Pastena, Jansen, de Lint, & Moss (2018).
The participatory affordance of IDNs can be examined with the aid of Ryan’s (2015) five levels of interactivity, ranging from low to high. Level 1 interactivity does not affect the order of the discourse it presents (e.g., many printed novels); Level 2 has predetermined story content, but the order varies (e.g., interactive fiction); Level 3 makes the user a member of the storyworld who progresses along a fixed storyline, which is controlled by the system (e.g., video games); Level 4 narratives are generated based on data that comes in part from the system and in part from the user (e.g., AI environments), but they are authored and users respond to affordances built into it rather than being entirely responsible for constructing the narrative; and Level 5 involves permitting the users to access and modify the system for others to expand the possibilities of action offered by the existing system (e.g., open-source systems) (Ryan 2015, p.176–185). Digital culture favours narratives that promote “emergence and self-renewability” or replay value (Ryan 2015, p. 185), which is in part determined by the level of interactivity. Thus, these different levels of interactivity can be used to determine the level of participation and the replay value of the IDNs.

The ludonarrative toolkit (summarised in Table 2), drawing on concepts from media studies, narratology and ludology, illustrates the level of complexity involved
in analysing IDNs. This toolkit is applied in the following section to dualistically demonstrate the evolution of IDN genres as well as identify the affordances and limitations of different media.

Table 2. A Ludonarrative Toolkit for Analysing IDNs (Basaraba, 2018, p. s13)

<table>
<thead>
<tr>
<th>Affordances (Murray, 1997)</th>
<th>Spatial</th>
<th>Encyclopaedic</th>
<th>Procedural</th>
<th>Participatory</th>
</tr>
</thead>
</table>

2.3 The Evolution of Complexity in Interactive Digital Narrative Genres

The origins of IDN research stemmed from computing science in the early 1990s and focused on using artificial intelligence to generate plot developments in response to the participant’s actions (Spierling, 2005, p. 1). In the early 2000s, the focus shifted to building story engines (i.e., software) that allowed for automated narration in reaction to user input, which was often conversation based (Spierling, 2005, p. 1). Eliza, built in 1966 by Joseph Weizenbaum, is often cited as the first IDN. It was designed to engage in meaningful dialogue with humans to mimic a psychological therapist to study natural language communication (Koenitz, 2010, p. 23). After Eliza, many other IDN genres were developed as new technologies and methods of artistic expression emerged. Examples include, interactive cinema, interactive/hypertext fiction, interactive video games, transmedia stories, virtual reality narratives, and location-based narratives. These individual genres can be grouped or mapped to aid scholars in understanding and discussing the complexities of each form. To date, most scholars focus on a single genre and previous research in IDN has mostly been done separately by computer scientists and humanists (Koenitz et al., 2013). Thus, genre groupings could create a flexible relational connection to aid scholars in a transdisciplinary discussion of the commonalities and differences between different types of IDNs rather than acting as a mutually exclusive classification system.
As discussed in regards to the ludonarrative continuum, IDNs of different genres and even specific iterations of each genre could sit on various places along the continuum depending on the narrative experience. As Murray (2005) explains, scholars “interested in both games and stories see game elements in stories and story elements in games: interpenetrating sibling categories, neither of which completely subsumes the other” (para 7). Therefore, Dena and Gleeson’s map of the New Writing Universe (as cited in Koenitz et al., 2013) provides an overview of the current state of the art in interactive digital narrative genres (see Figure 5). This visual mapping of IDNs will need to be refined and updated as new digital technologies and narrative genres are created. The full scope of the New Writing Universe cannot be covered in this thesis, so the focus is on genres within “Games and IDNs” and “Cross-platform narratives” groups. The selected genres that are discussed in more detail are interactive fiction, transmedia storytelling, augmented reality games (ARGs) and interactive documentaries (iDocs). These genres will be analysed based on the qualities noted in the ludonarrative toolkit (see Table 2) and to simultaneously provide a brief historical overview of the pivotal developments in IDN creative practice.

**Figure 5. Map of the New Writing Universe (Dena & Gleeson as updated by Koenitz et al., 2013, p. 28)**
2.3.1 Interactive Fiction

Interactive fiction provides insight into how digital interactivity started being incorporated into narratives and into the development of newer IDN genres. Interactive fiction, also known as hypertext fiction, emerged in the 1980s as a method of storytelling using computer software. The authoring systems, a type of computer application software, made it easier for authors without programming skills to create digital narratives (Ziegfeld, 1989, p. 347). Interactive fiction allowed authors to incorporate three main types of reader interaction: prompting using a graphic or text change, providing choices through branching narrative, or posing questions (Ziegfeld, 1989, p. 347). Authors could include multimodal content – such as maps, charts, art/graphics, colour, movement/animation, and audio – and readers could choose to read further on certain topics, view or skip over graphic content, or watch a video instead of reading text (Ziegfeld, 1989). Interactive fiction also created an opportunity for authors to gather data on reader responses, prompt collaboration, and modify their art based on the responses (Ziefeld, 1989, p. 360). Popular examples of interactive fiction include Zork I (1980), Afternoon: A Story (1990), Patchwork Girl (1995), and Façade (2005).

Patchwork Girl, a digital spin-off from Mary Shelley’s Frankenstein, is used as an example to analyse the affordances and limitations of the genre. The narrative requires the user to piece together a female monster (i.e., Patchwork Girl) by following different links. Referring back to the Ludonarrative Toolkit discussed earlier, in terms of spatiality, the interface design is simple in black and white and provides a prominent image to communicate the narrative. From an encyclopaedic perspective, Patchwork Girl offers five narrative branches from the main storyline, each of which has many smaller branches as can be seen in the screenshot from the Storyspace authoring system (Image 3). Procedurally, it follows a Tree narrative structure, requires user interaction (i.e., participation) to form the whole monster, and results in an emergent narrative. The Tree structure is often referred to as a Database structure, which has a menu with many nodes (or web pages) connected to it (Ryan, 2015, p. 169) as seen in Image 3. Works of interactive fiction are often referred to as games rather than narratives. There is an active online community writing and playing on the free-authoring platform, Twine. For example, the Twine community holds annual awards,
the XYZZY Awards, for the best interactive fiction pieces (XYZZY Awards, 2017). However, interactive fiction is not as widely produced today as other IDN genres.

Image 3. Patchwork Girl Screenshot from Storyspace (Sasha, 2010)

There are a few reasons why interactive fiction did not become ubiquitous like other IDN genres. Firstly, it emerged at the beginning of computing software development and still required programming knowledge to use (Monfort, 2010); it was limited in terms of its capabilities, and many people did not own personal computers, so there was not a large enough market for readership. The first-generation examples of interactive fiction mostly remediated printed author techniques and did not use the affordances of the authoring systems to their full capacity (e.g., ability to experiment with alternative narrative structures, include multimodal content, and allow for agency). For example, Hackman (2011) argues that Patchwork Girl “reads for long stretches in a linear, page-to-page manner with little metacommentary, textual experimentation, or ontological disorientation” (p. 93). Patchwork Girl relies on print conventions as seen in “the characteristics of wholeness and permanence associated with paper and print, and the materiality of paper as a metaphor for the patchworked body of the creature” (Hackman, 2011, p. 102). The most commonly seen branching narrative structure in early interactive fiction is the Vector as exemplified in Figure 6.
In addition to the lack of experimentation with narrative structure, Rettberg (2013) notes that writers in the 1980s and 1990s were not focused on incorporating multimodal content by manipulating images, animations or programming tasks, but instead worked mostly with words as did many print-based writers (p. 26). In fact, Wardrip-Fruin (2004) argues that the definition of hypertext became synonymous with “chunk-style media” because most authors of interactive fiction and poetry used text-based hyperlinks (as cited in Basaraba, 2013), which is also why hypertext fiction is often used interchangeably with interactive fiction. Since the narrative content was limited mostly to hyperlinked text, the level of reader agency was relatively low. Reader interactivity was low because “most readers want to transfer their established reading habits to the new technology; [but] it is up to us to apply what we learn about the reading experience to the new technology” (Kostick, 2011, p. 136). In adapting to new technology, readers experienced difficulties with interactive fiction, such as the increased time required to read branching storylines, the difficulty of returning later to the same spot in the text, and the increased importance of transitions between two points (Ziegfeld, 1989, p. 365). Although interactive fiction presented new challenges for authors, it also highlighted the affordances of creating non-linear narratives, incorporating multimodal content, and the ability to reduce the barrier between author and reader. In the 1990s, new methods of publishing, communicating and interacting in a network culture were emerging, which also contributed to the interactive fiction genre largely becoming obsolete before it was widely adopted (Rettberg, 2013, p. 28). Most notably, the World Wide Web created more authorial opportunities beyond the simple link-and-node hypertext and HTML (Rettberg, 2013, p. 33). Due to these affordances, IDNs increased in design and narrative complexity, which is well
exemplified in transmedia storytelling—one of the most commercially successful genres to date.

2.3.2 Transmedia Storytelling

Transmedia stories provide interconnected narratives rooted in one story on multiple digital and non-digital platforms, such as books, films, and games (McNely & Teston, 2014). The term transmedia storytelling was coined by Jenkins (2006) who defined it as a new aesthetic that emerged in response to “media convergence—one that places new demands on consumers and depends on the active participation of knowledge communities. Transmedia storytelling is the art of world making” (p. 21). Transmedia storytelling was further specified by the Producers Guild of America in a manifesto that stated that a transmedia narrative must consist of three (or more) narrative storylines existing within the same fictional universe on multiple platforms in order to clarify that “narrative extensions are NOT the same as repurposing material from one platform to be cut or repurposed to different platforms” (Ryan, 2016, p. 3). In other words, true transmedia stories have different content spread across different media and when combined form one story; they are not one story that has been adapted into different media. To fully experience a transmedia story, consumers must assume the role of hunter and gatherers, chasing down bits of the story across channels, comparing notes with each other via online discussion groups and collaborating to ensure that everyone who invests time and effort will come away with a richer entertainment experience (Jenkins, 2006, p. 21).

Transmedia stories are often analogised as jigsaw puzzles where the different pieces fit together into a “whole [that] is more satisfying than the sum of the parts” (Pratten, 2011, p. 3). In Figure 7 below, Pratten (2011) shows how the “old world” of the traditional media franchise had different adaptations of the same story into different media and the “new world” of the transmedia franchise has one story that exists as separate pieces that need to be put together through reader participation. Within the storyworld, each piece of a transmedia narrative, expressed in different media, functions as a micro-narrative or a small piece (e.g., movie, game or book) of a larger macro-narrative puzzle of the full transmedia storyworld. Each micro-narrative is self-sufficient and has its own narrative structure, which can vary depending on the medium. Transmedia stories rely on establishing a strong storyworld because it “holds together the various texts of the system” (Ryan, 2013, p. 363) by functioning as the
underlying thread tying the pieces of the story located in different media together into a macro-narrative.

Figure 7. Traditional Media versus Transmedia Franchises (Pratten, 2011, p. 3)

In terms of design affordances, transmedia stories have primarily been developed using one of two methods. The first method is the “snowball effect” where a story becomes so culturally popular that it results in prequels, sequels, and fan fiction (e.g., *Harry Potter*, *Star Wars*, and *Twilight*) and the second is a “system” where a story was conceived from the beginning to develop over many different media platforms (e.g., *The Matrix*, *The Blair Witch Project*, and *24*) (Ryan, 2013, p. 363). Most transmedia stories appear in fiction genres, follow the snowball effect, and are considered by some (e.g., Ryan, 2017) to be a marketing strategy. Transmedia storytelling emerged in two different approaches on the East and West Coast of the United States. The West Coast focuses on major franchises and the East Coast focuses on journalism, installations, alternate reality games (ARGs), augmented books, and interactive TV (Ryan, 2016, p. 3-4). Studies in fictional transmedia storytelling have examined: how stories belonging to the same storyworld and are linked together (i.e., narrative thread), how narrative content travels across media, how the media affect the stories (i.e., affordances), how the storyworlds turn into cult narratives (i.e.,
saleability), and what people do with cult transmedia systems (i.e., fandom) (Ryan, 2016, p. 8). Studies in non-fiction transmedia stories have looked at incorporating the format into the museum experience (Tosca, 2016; Kidd, 2014; Wyman, 2011; Tallon & Walker, 2008) and education (Rodrigues, & Bidarra, 2016; Dickinson-Delaporte, Gunness, & McNair, 2018; Kalogerias, 2019). However, fictional transmedia stories are still more common and have been more widely studied than non-fiction, thus they are referred to here to further analyse the common narrative structures as per the Ludonarrative Toolkit.

One of the most popular transmedia stories, which followed the snowball effect method of design, is Harry Potter (Rowling, 1997). After the success of the book series, prequels, sequels and other interactive media narrative experiences were produced based on the original storyworld. Each individual, or micro-narrative, has a narrative structure and contributes to the overall macro-narrative or storyworld. For example, the books and films have a linear structure, the Pottermore website has a Tree structure (see Figure 8), and The Wizarding World of Harry Potter theme park has an Action Space structure (see Figure 9) (Ryan, 2015). The Pottermore website’s Tree structure does not lead to a story ending because there are multiple possible endpoints/nodes. Therefore, websites – often employing the Tree structure – contain narrativity rather than a complete narrative. The Wizarding World of Harry Potter theme park follows an Action Space structure because a visitor can “wander in a geography made of distinct subworlds, each of which offers a different, carefully scripted adventure” (Ryan, 2015, p. 175). For example, a visitor can walk down Diagon Alley (represented by a line in Figure 9), which has different buildings or episodes (represented by the nodes in Figure 9) that can be entered like the Leaky Cauldron for a dining experience (represented by the circle around the nodes in Figure 9), Ollivanders for a wand-selection experience, or Gringotts bank for a roller coaster experience (universalorlando, 2018). In an Action Space structure “interactivity takes place on the macro-level and narrative plotting on the micro-level” and it “abandons the idea of an overarching dramatic narrative in favour of an epic structure of semi-autonomous episodes” (Ryan, 2015, p. 174-175). These micro-narratives are part of the larger macro-narrative, which also has its own structure, especially in the case of transmedia narratives designed as a system.
Figure 8. Tree Narrative Structure (Nelson, 2015)

Figure 9. Action Space Narrative Structure (Ryan, 2015)

The overall macro-narrative structure in a transmedia story designed using a system approach often follows a Braided Plot or House of Many Windows structure (see Figure 10). This structure allows users to switch “windows” on a multi-stranded but determinate narrative where the horizontal axis represents time, the vertical axis represents space, each node represents a physical event, and the lines connecting the nodes are the destinies (or paths) of the participants (Ryan, 2015, p. 173). The simultaneous events are vertically aligned and events taking place in the same location are horizontally aligned (Ryan, 2015, p. 173). For example, one horizontal line can represent the life/perspective of a single character or sub-plot of the macro-narrative. The braided structure allows for many variations, but it may restrict the switching between plotlines because, for example, a character could die in one time/place but still be alive in another. To mitigate this potential design issue, the Star Wars Expanded Universe, Howard Roffman, Executive of Lucasfilm, established a rule that anything new added to the storyworld could not violate what came before to prevent possible
narrative contradictions (Rholetter, 2016, para 16). This policy served as a model for the intricate, complex storytelling that became the standard for transmedia stories (Rholetter, 2016, para 16). The transmedia story consumer can explore the different “destiny lines” of the braid (i.e., micro-narratives) as part of the macro-narrative storyworld in whichever order they choose because time and space are constant and prevent contradictions. Each micro-narrative in a transmedia story can be understood on its own, but when the micro-narratives come together, it adds value to the whole macro-narrative storyworld and creates a pleasurable experience for the audience because their participation pays off.

Figure 10. The Braided Plot Narrative Structure (Ryan, 2015, p. 175)

Transmedia storytelling, although it has sustained popularity unlike interactive fiction, is not without its limitations. The most popular transmedia stories are major franchises because they have the funding to expand the story across multiple media. Transmedia stories require a vast array of skills and knowledge to develop as they are created in many different media. The more people involved in creating the narrative, the larger the publishing budget that is required, and storyworld management becomes more complex. Another limitation is that transmedia stories can be taxing on the audience who need to actively seek out the content, consume it and make sense of each micro-narrative in the context of the larger macro-narrative. Transmedia stories can cause the audience to experience emersion (the opposite of immersion) – a sense of disconnection from the story (Seraphine, n.d., p. 3) – because they need to exit or finish their experience with one micro-narrative in one medium and then locate the next micro-narrative in a different medium. Perryman (2008) acknowledges that transmedia
texts must contain enough added value to be worth seeking out and consuming otherwise, they will not be successful. Furthermore, transmedia stories allow for audience participation, but the interactivity is often limited to activity through searching, clicking, and consuming the various types of multimedia stories rather than providing agency. For example, books, films, comics, and websites have a low level of agency because the audience’s individual actions do not impact the micro-narrative delivery.

On the other hand, the audience’s collective actions can inspire story creators to take the macro-narrative in different directions. Many transmedia audiences work together and interact online to create movements that can influence the story creators to make changes or produce content in the manner that the audience wants (also known as participatory culture). For example, fans often create their own content communities as spin-off paratexts26 of the original storyworld that was produced by the transmedia creators. Fan communities have such power in transmedia storytelling that spin-offs from the mothership (i.e., macro-narrative) can become their own transmedia franchises, such as The Fifty Shades of Grey books and films which are fan fiction that were written by E.R James on a fan page for the Twilight book series (and films) by Stephenie Meyer. Highly-active participatory fan cultures can result in a loss of authorial control of the storyworld, but this situation has not been widely documented as a limitation of the genre. Transmedia is a genre that has worldwide appeal, has spread across different interactive media, and has even developed sub-genres, such as alternate reality games (ARGs).

2.3.3 Alternate Reality Games (ARGs)

ARGs are another cross-platform IDN genre and have been compared to a “modern-day, digital version of the scavenger hunt” (Meifert-Menhard, 2014, p. 160). ARGs are transmedia narratives that “take the substance of everyday life and weave it into narratives that layer additional meaning, depth, and interaction upon the real world” (Montola et al., 2009, p. 37). They do not present themselves as typical games experienced through avatars; they are presented as part of the player’s reality or everyday life (Meifert-Menhard, 2014, p. 162). Players are drawn into the game

---

26 Paratext is “those liminal devices and conventions, both within and outside the book, that form part of the complex mediation between book, author, publisher, and reader” (Genette, p. i, as cited in Mackey, 2001, p. 169).
through forms of word-of-mouth marketing, which offer “rabbit hole” entries into the game through campaigns, such as movie posters, promotional trailers, etc. (Meifert-Menhard, 2014, p. 163). ARGs use a range of accessible media (e.g., websites, short message service (SMS) messages, global positioning systems (GPS), phone calls, posters, and even live actors planted in real space), but they are played more out of interest in solving problems as a group rather than for the story (Ryan, 2013, p. 377).

ARGs consist of the script, the performance, and the protocol. The script includes the narrative structure, rules, entry and exit points, and multimedia; the performance involves the processes of transformation and emergence (i.e., collective actions) that produce one narrative variant of the script; and the protocol constitutes the linear traces of interactivity and feedback that represents one possible narrative path through the game (Meifert-Menhard, 2014, p. 169-172). While transmedia stories involve participants uncovering a pre-written narrative, ARGs have players “engage in a dynamic performance with a given set of parameters, creating a unique storyline that can be communicated and read as a narrative abstraction of this performance after the game has come to an end” (Meifert-Menhard, 2014, p. 169). In other words, ARGs not only provide but require users to engage with a mixed reality/alternate reality in order to reveal the location-based pieces of the narrative and the resulting emergent narrative.

ARGs have been created as stand-alone games and to promote narratives in other media, such as TV and film (Ryan, 2013, p. 372). Frequently-cited examples include the first ARG called *The Beast*, which was created to promote the film *A.I. Artificial Intelligence* (2001) and *Why So Serious?*, created to promote the film *The Dark Knight* (2007). ARGs can be created in advance of a film or TV show to promote it, they can run concurrently, or they can follow the narrative by picking up a thread in the plot (Ryan, 2013, p. 373). Since ARGs aim to appear as real-life experiences, the script is not accessible beforehand, it is hidden and the player must discover the rules of the game as they play and communicate with other players to progress in the game (Meifert-Menhard, 2014; Ryan, 2013). This Hidden narrative structure (see Figure 11) has two levels. The bottom level is fixed, unilinear and temporally directed as a series of events to be reconstituted and the top level is the atemporal network of choices determined by the player’s actions (Ryan, 2013, p. 173). Between the top and bottom level are dotted lines that link the episodes of player discovery (represented by black
nodes) with the facts at the bottom of the story (represented by hollow nodes) in Figure 11 (Ryan, 2015, p. 173). Therefore, ARGs have complex IDN structures that require user agency in order to produce the emergent narrative, which cannot be fully predicted by the designers because they involve real-world timing and players.

**Figure 11. Hidden Story Narrative Structure (Ryan, 2015, p. 173)**

One limitation of ARGs is that they are ephemeral phenomena since they run over a limited time span, exist only in isolated media the players used, and “when the game is over, the public recording of the story vanishes” (Ryan, 2013, p. 378). The emergent narratives are difficult to retrace after they have been solved/produced and the game designers often shut down or remove the content once the game is finished. ARGs also require a “drama manager” to run the game based on user participation instead of being actualised based on system rules (e.g., artificial intelligence). This is time-consuming and requires close monitoring of player actions as well as plans for situations where the players do not perform as expected. Another limitation is that, unlike interactive fiction and transmedia stories, which can be experienced by individuals, an ARG cannot be played by a single person because players need to work together collectively to solve the clues and piece together the puzzle. There have also been cases where non-players have mistaken ARGs for true events rather than a fictional storyworld. ARGs use mixed reality and intentionally “endeavour to both conceal and transcend any frame” (Davies, 2017, para 5) where the frame refers to the media’s physical boundary that signals people to the fact that they are entering or immersing themselves into a fictional world. This can cause societal issues, especially
with the increased concerns regarding the publication of misinformation online. Davies (2017) argues that ARGs can be “highly immersive, edgy, controversial and life changing” (para. 2) and therefore, designers need to consider the ethics of participation.

This analysis of the developments in IDN genres in the games and cross-platform groups, has shown that digital media have allowed for more complex and interactive narratives to be created. Narrative capabilities have expanded as per Murray’s (1997) four affordances of digital media. In terms of the spatial affordances, the digital interface and ability to incorporate multimodality has increased, the encyclopaedic capacity increased with the development of narratives into cross-media genres, procedurally allowed for the inclusion of multiple narrative structures in one storyworld, and designers have found methods that encourage and require user participation to produce the emergent narratives. The examples discussed above focused on fiction because fictional narratives have been the most commercially successful, widely published, and studied by scholars. Therefore, it also highlighted a gap in the literature on non-fiction IDN genres. Although non-fiction IDNs have been explored much less frequently than fictional examples, they do exist and are of growing interest to a range of sectors, such as education, training, journalism, and cultural heritage.

2.4 Gap in Non-fiction Interactive Narrative Studies

In relation to the genres discussed, there are well-known examples of non-fiction transmedia projects and ARGs. In the case of non-fiction transmedia, the audience consumption involves an even more collective process where people pool their knowledge and skills, and this collective action has been viewed by some scholars as an important alternative source of media power (Jenkins, 2006, p. 4). Jenkins (2006) argues that “collective meaning-making within popular culture is starting to change the ways religion, education, law, politics, advertising and even the military operate” (p. 4). For example, collective intelligence is being used for developing the Linux software and creating the content of Wikipedia. ARGs have been used in non-fiction applications as forecasting tools in social experiments (Meifert-Menhard, 2014, p. 173). These applications can provide behavioural data that could predict what may happen in the future if people reacted and made choices as they do in the game
For example, ARGs have been developed to see what choices people make on threats to the environment, such as global warming or a lack of natural resources. The first non-fiction ARG was called *World Without Oil*, which played out the scenario of the world running out of oil (Rusnak, Dobson, & Boskic, 2008). The British Red Cross created an awareness campaign for the displaced Ugandan civilians due to the 20-year rebellion called *Traces of Hope* (2008); and an EU-produced ARG was created for a closed group of players to support multilingualism in secondary schools—*ARGuing for Multilingual Motivation in Web 2.0* (2009). These transmedia and ARG examples demonstrate the affordance of non-fiction to inspire participation.

A genre that has received the most concentrated scholarly attention on interactive non-fiction has been the remediation of documentary into interactive documentaries. Documentary had a long history before it was adopted into interactive digital forms. The term documentary in English was first used by John Grierson to describe *Moana* (1926), became popularised by the 1930s, and began to denote a “higher order of nonfiction cinema” (Plantinga, 1997, p. 26-27). Non-fiction and documentary are open concepts similar to art, and documentaries have a “braid of family resemblances” (Plantinga, 1997, p. 15) or in other words, genre conventions. Genres are categories that have fuzzy boundaries and

are best thought of in relation to a prototype with a spreading wave of less central examples. The prototypical example of a category possesses all of the properties through central to the category, whereas a more peripheral member (and here the status of ‘membership’ may be unclear) might contain only one or some of those characteristics (George Lakoff as cited in Plantinga, 1997, p. 15).

The process of defining documentary has failed in a similar way that thinkers have struggled over the past 2,000 years to define art (Plantinga,1997). Art, Weitz argues, is an open concept that has no essence and thus cannot be defined in the traditional sense, rather it is “a complicated network of similarities overlapping and criss-crossing resemblances” (Plantinga, 1997, p. 14). Thus, this reiterates the earlier argument for a better understanding of IDN genres, since each has its own conventions that may braid together or overlap in different manifestations.
An affordance of non-fiction IDNs is the ability to persuade. Greirson expressed that documentary must be dramatic and instructional to promote common thoughts and feelings among the audience, and that it is best used for propaganda for a social purpose (as cited in Plantinga, 1997, p. 27). However, Plantinga (1997) argues that “society uses nonfiction film and video for hundreds of purposes; we can no longer think of one as its sole legitimate function” (p 29). Non-fiction film expresses and implies attitudes and statements about its subject but does not aim to reproduce the real, films use artistic proof or rhetorical persuasion to “win the assent of the listener or spectator” (Plantinga, 1997, p. 38-123). He explains that persuasion in film occurs through language, often through a voice-over and in tandem with images to make complex arguments (Plantinga, 1997, p. 123). Overall, he states that non-fiction film is a genre of rhetoric rather than one of imitation (Plantinga, 1997, p. 38). Similarly, Gifreu-Castells (2014) argues that interactive non-fiction can “have a deep impact as they are able to deal with factual material, they can influence, affect and transform the real world” (p. 156). For example, documentaries are being combined with games to create a more immersive and engaging experience for participants and have potential in the education sector (Gifreu-Castells, 2014, p. 160-161). Considering there is less published research in the area of interactive narratives in non-fiction compared to fiction genres, this thesis addresses this gap and applies it to the growing area of cultural heritage applications.

2.4.1 Interactive Documentary (iDocs)

This thesis draws on the affordances of interactive documentaries (iDocs) to demonstrate how IDN theory can be expanded and applied to new non-fiction genres through creative practice. The origin, definition, and scope of interactive documentary (iDoc) as a genre are more difficult to pinpoint in the literature than the other genres previously discussed. In a general sense, iDocs are “any project that starts with an intention to document the ‘real’ and that uses digital interactive technology to realize this intention” (Aston & Gaudenzi, 2012, p. 125). The fluidity of this genre stems from the many terms used to describe different works, the common appearance of remediated genre conventions from linear documentary film, and its study falling across multiple fields, such as cinema, interaction, videogames, and video art (Almeida & Alvelos, 2010, p. 123-124). Key requirements of iDocs are moving images, full-screen viewing, and audio content (Almeida & Alvelos, 2010, p. 124-125). Many
iDocs are distributed on the web, but they are also built on a variety of digital platforms including DVDs, mobiles, GPS devices, and gallery installations (Aston & Gaudenzi, 2012, p. 126). They have also been called web-docs, collab-docs, or participatory-docs, and have four modes of interactivity, which are conversational, hypertext, experiential, and participatory (Aston & Gaudenzi, 2012). The conversational mode uses 3D worlds to create a seamless interaction with the user; the hypertext mode gives users an exploratory role through the selection of pre-existing options; the participative mode allows the user to be involved during the production process (e.g., editing, shooting or during launch and distribution); and the experiential mode invites the user into a hybrid space often using GPS to bring digital content into the physical space (Aston & Gaudenzi, 2012, p. 126-128). An affordance of iDocs is that they can present multiple points of view from a single author or from a community of authors, they can present contested points of view, and allow users to come to their own conclusions (Aston & Gaudenzi, 2012, p. 133). As the study of iDocs became further established, a number of iDocs were produced between 2009-2012, many of which became highly cited in scholarly literature, such as *Highrise* (2009), *Prison Valley* (2010), and *Welcome to Pine Point* (2011) (Aston & Gaudenzi, 2012, p. 128-129).

One of the first projects to be called an iDoc, *Moss Landing* (1989), examined life in the small town of Moss Landing, California through hyperlinked video clips that were accessed by the user via “hotspots” (MIT Docubase, 2020). Other commonly-cited examples of iDocs are *Gaza/Sderot* (2008), *Bear 71* (2012), *Hollow* (2013) and *Fort McMoney* (2013). Nash (2017) explains that iDocs frequently aspire to expand documentary’s political role to provide new ways of engaging with social issues, participation, and citizenship and they are shaped by cultures and the possibilities of digital media (p. 9). Documentary has the ability to enhance public knowledge, provide citizens with informational resources to aid decision-making, and they act potential platforms for action and participation (Nash, 2017, p. 10-11). Nash (2017) discusses these functions of iDocs through the example of *Fort McMoney* (2013)—a documentary game that addresses the social, economic, and environmental impacts of Canada’s oil sands industry in Fort McMurray, Alberta, to encourage collective debate and decision-making (p. 23). The documentary game presented audio-visual information, fostered debates through weekly forums, formed public opinion through various polls, and contributed to collective decision-making through
weekly referenda (Nash, 2017, p. 15). *Fort McMoney* emphasised the value of collective engagement and shared experience so that players understand different perspectives on the issue and form a collective conscience (Nash, 2017, p. 16). Although the documentary inspired participatory action, Mal (2014) noted that only 1,869 of the 300,000 players of the *Fort McMoney* documentary game contributed to debates and that it is typical to see a one per cent participation rule in digital projects (as cited in Nash, 2017, p. 18). Furthermore, the digital debates on *Fort McMoney* focused on pro-environment perspectives, which may have alienated those with a pro-industry perspective, and the social media (i.e., Twitter) conversations focused on the novelty of the digital media game rather than the topic of oil sands (Nash, 2017, p. 20-21). Therefore, iDocs can be used to varying degrees of success as a rhetorical tool to generate public participation.

In terms of common narrative structures for iDocs, Munday (2018) compiled a list, which includes a Linear, Branching, Fishbone, Parallel, Threaded, and Concentric narrative structure (see Image 4). Many of these structures are theoretically the same as those described by Ryan (2015) (see Image 2) but use alternative terms. The one structure that is not mentioned in Ryan’s (2015) summary is the Concentric narrative structure, which has a central hub that contains multiple entry points into different threads of the story allowing viewers to choose which path they desire (Munday, 2018). The Concentric structure provides a lot of freedom and interactivity but results in a lack of authorial control over what the viewer consumes and whether they experience a narrative journey when they reach the end. Navigation is an important design choice and iDoc creators need to continually innovate ways of marrying the interface with the narrative “and no individual work establishes a template for future i-docs [sic]” (O’Flynn, 2012, p. 147). iDocs that replicate an existing structure or design, O’Flynn (2012) argues, is likely to fail because each project has different aims for the core experience and desired communicative effect (p. 147). For example, transmedia documentaries that rely on curation and collaboration of user-generated content are different than those where the design is based on highly structured and authored content systems (O’Flynn, 2012, p. 149). These participatory iDocs are “increasingly processual in that they can be designed as ongoing projects inviting the submission of participant-generated content” (O’Flynn, 2012, p. 149). Since iDocs have the potential to persuade the public or encourage participatory civic action
through non-fiction narratives, selecting the right narrative structure and adapting it to the specific project requirements is a crucial step in the creative process.

**Image 4. Common iDoc Narrative Structures (Munday, 2018)**

In addition to the sometimes limited ability to persuade participants into further civic action, another limitation of the iDoc format is a lack of insight into the user experience. To date, most iDoc scholarship has examined case studies (Aufderheide, 2015; Vázquez-Herrero, Negreira-Rey, Pereira-Fariña, 2017; Gifreu-Castells, 2018) and few publications cover user interaction studies. As Roth and Koenitz (2019) note, only a few studies have evaluated the effectiveness of IDNs (p. 102). Four previous user-testing studies have been conducted with different fictional IDNs including the video game *Façade*, which had 11 players (Milam et al., 2008); *Turbulence*—a hypnarrative interactive movie (Knoller & Ben-Arie, 2009); *B4*—an iDoc (Gantier & Labour, 2015); and the Netflix film *Black Mirror: Bandersnatch* (Roth & Koenitz, 2019; Kolhoff & Nack, 2019). The study on the fictional computer-based interactive movie, *Turbulence*²⁷, had eight participants—limited to academics with backgrounds in cinema and video games—in an exploratory study of the phenomenological experience (Knoller & Ben-Arie, 2009, p. 46). The study showed that users mentioned confusion regarding who the protagonists were, what the conflict was, and approximately half made use of alternative plotline options (Knoller & Ben-Arie, 2009). *Turbulence* users had trouble identifying the hotspots (i.e., links) and said there

---

²⁷ *Turbulence*’s plot focuses on three friends who meet 20 years after they were arrested by Israeli police and incriminated each other; a love story between two characters is rekindled which disrupts their families and leaves users to choose whether love or family will triumph (Knoller & Ben-Arie, 2009, p. 44).
were too few of them; they were split between whether the interaction increased or decreased their engagement; and they gained meaning through self-implication in the narrative (Knoller & Ben-Arie, 2009). Therefore, this expert audience highlighted that the iDoc had interface design issues and that the agency provided may not have been meaningful. Kolhoff and Nack’s (2019) study on *Bandersnatch* involved 169 participants who thought they were given the right number of choices and had adequate control but were unhappy with the choice predictability and the consequences, and they complained about dead-ends (Kolhoff & Nack, 2019, p. 81). Overall, 72% found watching *Bandersnatch* worthwhile despite the fact that only 45% of participants were satisfied with the ending they selected (out of five possible endings) (Kolhoff & Nack, 2019, p. 81). Participants stated that the novelty factor was more positive than the film itself and this increases pressure for future interactive films and iDocs to have a more intriguing, agency-driven and satisfying story (Kolhoff & Nack, 2019, p. 83). These user studies highlighted issues with the interface design and an interest in the novelty of the genre. At the time this thesis was written, there were no user studies on non-fiction iDocs specifically in regard to the level of perceived agency based on the narrative structure, multimodal choices in the interface design, and persuasiveness. This thesis and future studies can, thus, provide more insight into the design challenges, user experience, and a way forward for the iDoc genre. Considering iDocs are an emerging genre of non-fiction IDNs and that they have been employed to engage the public in social, economic and environmental issues, applying this genre to cultural heritage requires further investigation.

### 2.5 Non-fiction Focus: Narrativizing Cultural Heritage

This section focuses on identifying the trends and digital media being used in the cultural heritage sector as well as the associated affordances and challenges. Narrative and history have been studied in historiography, a research area that encompasses the forms and functions of narration and narrative in history (Fula, 2014, para 1.) History is often understood as portraying and understanding past events and where “there is no narrative, there is no distinctively historical discourse” (White, 2000, p. 3). Thus,

---

28 *Bandersnatch* is a story set in 1984 about a British programmer and game designer, Stefan Butler, who begins to question his reality as he designs a game based on a Choose Your own Adventure fantasy novel (Kolhoff & Nack, 2019, p. 77).
narrativizing cultural heritage content in IDNs can aid the public’s understanding of the past. History is narrated, Fula (2014) writes, “historiography organizes its material by naming adversaries, establishing or inputting intentions and identifying obstacles and factors in overcoming them” (para 2). The concept of history as a “single unified story of the human past” emerged in the philosophy of history in the eighteenth century (Fula, 2014 para 19). However, a Modernist approach to historiography considers multi-perspectivity (White, 2000), where meanings are layered into a representation of factual content and extended beyond the specific situation (Fula, 2014, para 13). White (1986) discusses “historical pluralism” as a concept that “presupposes either a number of equally plausible accounts of the historical past or, alternatively, a number of different but equally meaningful constructions of that indeterminate field of past occurrences which by convention we call ‘history’” (p. 484). In other words, history can have many accounts and reconstructions of those accounts. History is made up of “lived stories [sic] that only await the historian capable of discovering [sic] them and then relating them in a narrative [sic] which figures forth […] their true natures” (White, 1986, p. 485-486). History and by association historiography are complex disciplines that cannot be adequately covered in this thesis, but what is brought to the forefront is the view among historians that “the narrative mode of representation as an impediment to history’s transformation into a science, rather than as the ‘natural’ way of representing historical phenomena” (White, 1986, p. 491). History is not a science; it is a humanities discipline, that involves moments in time recorded by individuals who wrote from a specific historical context and cultural viewpoint. Therefore, adopting a “pluralist” or multi-perspective approach to narrativization of cultural heritage helps, in some regard, to sidestep the issue of aiming to abide by the conventions of historiography or constructing a single narrative from one perspective. Again the concept of narrativity is applied to cultural heritage as an approach to narrativize heritage by presenting multiple-perspectives rather than to tell a single story.

Cultural heritage institutions such as galleries, libraries, archives and museums (GLAMs) are increasingly developing interactive, digital products to engage the public and provide visitors with access to more information at their fingertips. This move is

---

29 Narrativization is a constructive process that “enables readers to recognize as narrative those kinds of texts that appear to be non-narrative” (Fludernik, 1996, p. 46).
often referred to as a turn towards “immersive experiences” (Kidd, 2018), but little research has been conducted to better understand current practices. Academic research themes focus on examining user experiences with virtual reality (VR) and augmented reality (AR) in museums; geographic information systems (GIS) and 3D modelling at archaeological sites; serious games for educational contexts, social media and co-created experiences; crowdsourcing specific tasks; the preservation of intangible heritage; and developing mobile applications (apps) with cultural content (Economou, 2015). Continually improving the methods of digitising library and museum archives has led to an abundance of digital humanities projects and provided the public with access to an immense number of digitised or remediated artefacts—a big data corpus of expert-produced cultural heritage content. The challenge with this increase in digitised history is the ability to narrativize it in a way that engages the public and persuades them to discover more. A survey of the literature shows that cultural heritage IDNs commonly appear in four genres, namely (1) immersive and virtual museum experiences, (2) serious and locative games, (3) digital humanities projects, and (4) independently produced (i.e., creative industry) iDocs.

2.5.1 Immersive and Virtual Museums

Significant developments and changes are taking place in museum practices in relation to digital media. Kidd (2014) summarises that contemporary museums are engaging in transmedia because they exhibit their materials across multiple media and are using social media to converse with their audiences; and these actions shift the dynamic of trust because the audience members become authors through the production of user-generated content. She also notes that museums are incorporating personal narratives into some exhibitions (e.g., 15 Second Place project at the Australian Centre for the Moving Image), creating interactive digital displays within the museum buildings, and creating online gaming aspects (Kidd, 2014). Digital exhibitions are increasingly being developed by GLAMs and have resulted in a genre known as virtual museums, defined as “a logically related collection of digital objects

---

30 Digital Humanities is “by its nature a hybrid domain, crossing disciplinary boundaries and also traditional barriers between theory and practice, technological implementation and scholarly reflection” (Flanders, Piez & Terras, 2007). It is also known as Humanities Computing which involves the applications of computer to research subjects loosely defined as the humanities or arts (Hockey, 2004, p. 3).

31 Locative media is a “mobile media movement in which location and time are considered essential to the work” (Tuters as cited in Nisi, Oakley & Haahr, 2008, p. 72), and require the user to physically move to progress in the game.
composed in a variety of media” (Styliani, Fotis, Kostas, & Petros, 2009, p. 521). Virtual museums can be further specified into the sub-categories of a *brochure museum*—functioning as a marketing tool; a *content museum*—a website with a database of the museum’s collections; and a *learning museum*—offering different context-oriented points of access depending on the visitor’s demographic information to encourage them to return to the physical museum (Styliani, 2009, p. 521). Virtual museums employ a variety of technologies, such as imaging technologies, Web3D, VR, AR, mixed reality, haptics (involving navigation through physical touch), and handheld devices (e.g., cell phones, personal digital assistants, and tablets) (Styliani, 2009, p. 520-524). Examples of digital exhibitions for learning in the physical museums are the *mARCHive* and *Imago Bononiae*. The *mARCHive* is a 360-degree video exhibition for the 80,000 records of Museums Victoria in Australia where users can engage in emergent narratives organised by theme (Kenderdine, 2014), and *Imago Bononiae* is a 3D real-time application that is projected onto a wall or screen where people use physical body movements (i.e. haptics) to change the content displayed on the reconstruction of Bologna, Italy (Fanini & Pagano, 2015). These immersive experiences in the museums allow visitors to see and interact with more content in digital form that may not be available for physical display. Kidd (2018) explains that as immersive museums continue to be developed, the modalities of aural, haptic, olfactory and kinaesthetic are being explored and that meaning-making may move to become a “whole-body endeavour” (p. 5) in a physical sense. In addition to immersive in-museum digital exhibitions, virtual museums are becoming more widespread.

Many virtual museums function as content museums providing visitors with a database of their collections and some offer 360-degree virtual tours through the physical galleries. For example, visitors to the websites for the Louvre32, the Smithsonian,33 or the Vatican Museums34 can take a 360-degree virtual tour of past or current exhibitions. The methods and modalities used in digital content museums are discussed further through the two examples of *John Ashbury’s Nest* and *Belgian Refugees of 1914-1919*. These two websites include unique interfaces with non-linear narrative structures. The *John Ashbury’s Nest* website provides a virtual tour of the

---

33 The Smithsonian Museum virtual tours: [https://naturalhistory.si.edu/visit/virtual-tour](https://naturalhistory.si.edu/visit/virtual-tour)
poet’s house (dhlab, n.d.) where users can click on an icon to reveal multimodal content, such as text, 3D images and/or audio, and the narrative focuses on the exploration of Ashbury’s life. The narrative structure of this virtual tour is similar to a Directed Network (Ryan, 2015; see Image 2) because the interaction icons are presented in the 3D space of Ashbury’s house and the user follows the flow of space by moving forward or proceeding upstairs. Secondly, the Belgian Refugees of 1914-1919 website provides a virtual exhibition of a multimodal collection of artefacts (e.g., photos, letters, personal items) and personal anecdotes about the Belgian refugee movement to the United Kingdom during World War I (belgianrefugees14-18, 2018). The Belgian Refugees 1914-1919 website presents a graphical interface of multiple directional arrows that represent narrative paths (i.e., Branching narrative structure), which users can explore and view different multimodal content. These digital content museums provide independent virtual visitors with a narrativized experience of the collections. Although many museums have limited the use of storytelling – instead focusing on live interpretation, living history, and guided tours – the exhibition creators, designers, and curators are becoming more involved in storytelling (Neilson, 2017, p. 448).

Creating virtual museums also comes with many challenges. For example, there is the danger of visitors interpreting a graphic system’s presentation of an image as being as true/accurate, but reconstructed items are often the result of a personal and subjective interpretation; similarly, computer reconstructions only offer one aspect of the subject rather than reflecting the many ways the past can be interpreted; and the selected software may not be accessible to museologists (Styliani et al., 2009, p. 525-526). Furthermore, users without digital literacies may be excluded from the experience; museums may provide a fragmented experience with no obvious informational connections or context; and some museums lack clarity in their identified purpose so they need to identify target communities to better determine how content should be structured and delivered (Styliani et al., 2009, p. 525-526). Considering these challenges, cultural heritage IDNs offer opportunities to communicate many alternative interpretations, provide authoring tools that are accessible to museologists, offer a narratively cohesive experience, and personalise content for different users by eliciting their participation in producing the emergent narrative. Although there are challenges with storytelling, the role of museums and
curators are changing as society is increasingly becoming sceptical of experts. Nielson (2017) argues that due to this cultural shift museums need to re-evaluate their approaches to “interpretation, interaction and meaning making [sic]” (p. 441) and many exhibitions are becoming more storytelling oriented by allowing visitors to contribute (Nielsen, 2017, p. 445). For example, the UK-based storytelling project called Culture Shock! used museums and galleries to inspire members of the public to create their own stories through social media; the project garnered 550 participants whose digital stories were added to the relevant museum collections and broadcasted online and at special events (Nielsen, 2017, p. 449). Not only are museums incorporating more storytelling and public participation, but academics are also working with the GLAM sector to produce new digital narrative projects.

2.5.2 Serious Games, Gamification, and Mobile Apps

The genre of serious games has also been grouped together and sometimes used interchangeably with game-based learning, gamification, pervasive games, and alternate reality games (Xu, Buhalis, & Weber, 2017, p. 245-246). Andreoli et al. (2017) clarify that serious games are developed for training and educational purposes while gamification uses game design elements in digital applications to engage users and motivate desired behaviours (p. 3). Game-like applications developed for cultural heritage can be differentiated into virtual museums—as discussed in the previous section, prototypes and demonstrators, commercial historical games, and mobile applications (Anderson et al., 2009, p.3). Examples of prototype and demonstrators focus on digital visualisations, such as reconstructed archaeological sites including Rome in 320 AD, ancient Pompeii before the eruption of Mount Vesuvius in 79 AD, and the reconstruction of the sculptural decorations on the Parthenon in 437 BC (Anderson et al., 2009, p. 2-3). These visualisations show what life was like during that time in history, but provide little information beyond the visualisation and little user agency and thus, they are not discussed in further detail as this thesis focuses on interactive narrative. There are also commercial historical games, such as History Line 1914-1918, Great Battles of Rome, and Total War, which include significantly more educational information through a documentary-like experience mixed with player agency in gameplay interactions (Anderson et al., 2009, p. 2-3). These are also excluded from further analysis in this section since they are industry-produced games primarily for entertainment rather than as personalised heritage-focused interactive
narratives, they would take many hours of gameplay to conduct a ludonarrative analysis, and video games are not the primary genre of interest for this thesis.

Serious games apply gaming principles to a variety of non-fiction or serious topics, such as business, health, education, and archaeology as well as cultural heritage and tourism. Serious games exist as mobile applications (apps), web-based solutions, computer games, and mixed reality games, which combine real and virtual interactions (Anderson et al., 2009, p. 2). Examples of serious games for cultural heritage topics, include *The Voices of Oakland Cemetery* (Paterson et al., 2012) and *Viking Ghost Hunt* (Haahr, 2015). *The Voices of Oakland Cemetery* involved the creation of a mini-computer to provide auditory and AR content to introduce visitors either virtually or in-person to the history, architecture, and dramatized personal stories of notable people buried in the cemetery (Dow et al., 2005). *Viking Ghost Hunt* is a narrative-led, location-aware game based in Dublin, Ireland that engages the player in local Viking history between the years 800 and 1169 through a ghost-hunting game (Paterson et al., 2012, p. 65). These projects have gamified and narrativized history related to specific locations and players may, as a result of interaction, learn something. The advantages of location-based games are that they make use of multimodality, they are immersive, and they create a narrative experience. However, they often remediate the conventions of fictional narratives by focusing on characters (i.e. avatars) in the storyworld, which downplays the history and prioritises gameplay. Other limitations are that they cannot be fully experienced unless the person physically visits the historical locations and they require certain technologies or media (e.g. mobile devices and data) to deliver the experience.

In the tourism sector, gamification has been used as a method of marketing locations and brands to potential visitors to create awareness and enhance their on-site experiences at a destination (Xu et al., 2017). For example, *Musica Romana*, intended for use by tourists, is a website for mobile phones that allows users to experience classical music associated with and playable at specific churches located in Rome, Italy (Fagerjord, 2017). A large number of mobile apps have also been created for heritage trails to promote and engage tourists/visitors using gamification. McKercher and Du Cros (2003) found that most tourists participate for recreational reasons rather than for deep learning experiences and recommend that cultural tourism content be presented in an easily consumable and enjoyable manner with elements of learning,
but it should firstly entertain (p. 56-57). Many mobile apps provide suggestions according to the user’s location, interests, and previous choices (Economou, 2015, p. 217). The affordances of mobile apps are that they can include personalisation options that retrieve places, topics or exhibits of interest, allow users to book locations, create their own itinerary to better plan their experience, and enable tourists to share their experience through social media networks (Kourouthanassis, 2015, p. 71). That said, not all apps are created equal and some are more useful than others. A survey of over 50 heritage trail apps from all over the world uncovered common features of this genre in terms of which modalities of content, narrative communications styles, and personalisation techniques are used (Basaraba, Conlan, Edmond & Arnds, 2019). The results showed that text, images, and maps are used in every heritage trail app, and that audio is the second the most commonly used modality after text (Basaraba et al., 2019, p. 25). Despite the fact that AR and gamified experiences are trending topics in the scholarly literature, the majority of heritage trail apps currently on the market do not yet employ video as a modality, AR, nor personalisation techniques (Basaraba et al., 2019, p. 25). In the current market, there still seems to be a gap in personalising the user experience and that user testing studies could inform a design framework for mobile apps for cultural heritage.

Some of the main challenges with this genre were also identified in Ardissono et al.’s (2012) analysis of 37 personalised cultural heritage systems on desktop, mobile and wearable devices. They found that in many cases, digital cultural heritage products are extensive web-based collections that are difficult to navigate, visitors are highly heterogeneous and require different types information, and users are often first- and short-time visitors to an unknown place (Ardissono et al., 2012, p. 74). Methods of personalising cultural heritage content for different users involves delivering content based on a user model. A user model is commonly developed using one of three ways: by identifying user characteristics and interests in advance of building the systems; through initialisation where users fill in questionnaires to determine their preferences; or through dynamic user modelling based on tracking user interactions.

---

35 Personalisation in cultural heritage information systems involves modelling the user’s interests, knowledge, personal characteristics, and the contextual aspects, and then selecting and delivering the most appropriate content in the most suitable way (Ardissono et al., 2012, p. 73).

36 Cultural heritage systems are personalised by considering how individual visitors have different physical, personal, socio-cultural, and identity-related contexts and how these differences can be used to create individualised experiences, such as museum visits, for example (Ardissono et al., 2012).
with the system and adapting content delivery to their use patterns (Ardissono et al., 2012, p. 83-84). Ardissono et al. (2012) noted that “while mobile guides are now a common sight in cultural heritage settings and social web technology is spreading fast, personalized [sic] services are not” (p. 86). For personalisation to reach critical mass in cultural heritage systems, he suggests creating a “pathfinder” or “tour provider” approach to share personal views or individual navigation paths in collections; allowing for user transparency and the ability to reflect on their experiences with the cultural heritage system; and considering social interaction in groups based on group modelling, which could be developed by soliciting user-generated content (Ardissono et al., 2012, p. 87-90). In sum, IDNs for cultural heritage could provide emergent narratives, which could help personalise the user experience, provide individual narrative paths that may inspire multiple re-visits, and consider user-generated content.

2.5.3 Participatory Digital Humanities Projects

Cultural heritage projects from the digital humanities have fostered public engagement in the GLAM sector (Warwick & Bailey-Ross, 2020, p. 93). Digital humanities projects related to cultural heritage preservation and storytelling have incorporated public participation in a variety of ways. Many of these types of projects are case studies that have involved crowdsourcing through the digital transcription of historical documents and the creation of digital archives for teaching and learning purposes (Warwick & Bailey-Ross, 2020, p. 93-96). Participatory heritage in a European context has developed a series of initiatives that are undertaken by cultural and educational institutions to harness the affordance of information communication technologies to explore different types of partnerships with the public (Carletti, 2016). Typical models of public participation in heritage projects involve, for example, (1) contributory projects where visitors provide limited and specified objects, actions or ideas to institutionally controlled processes; (2) collaborative projects where visitors serve as partners in the co-creation of projects, managed by the institution, and work together with institutional staff from the beginning to define project goals based on community interests; and (3) hosted projects where the institution provides a portion of its facilities or resources to showcase programs developed by public groups (Carletti, 2016, p. 200). For example, two contributory projects that focused on public participation are the Open Monuments project and the National Famine Way project, which were created to be experienced both virtually and physically.
The *Open Monuments* project aimed to facilitate the preservation of and access to knowledge about Polish historical monument sites across the world, and it involved crowdsourced contributions to a database of information on the monument’s name, foundation date, address, GPS coordinates, photos, and allowed users to flag a monument that needed reparations (Otwartakultura, 2018). The first stage of the project involved public participation through an Open Data Day event, from which they gained 400 registered users for their monuments database. The participants were limited to adding specific types of information as provided on the website platform, so there was some control over the authorship of the narrative on the part of the project leaders. In another contributory project, the *National Famine Way* project aims to uncover and commemorate the history of the 1,490 tenants of the Strokestown Park Estate (Ireland) who were forced to emigrate by walking for six days from Strokestown to Dublin from where they were then transported in “coffin ships” to Canada and the United States (nationalfamineway, 2018). The *National Famine Way* project holds a biennial commemorative walk from Strokestown to Dublin and has an open public call for information about any of the 1,490 tenants on the website. The website also includes historical information and multiple narratives and utilises other means to connect with the public through social media channels, including Twitter and YouTube (nationalfamineway, 2018). This project allows for participation in multiple ways through social media, potential genealogy tracing, interactive digital narratives on the website, and an in-person “lived” experience of walking the Royal Canal to re-trace the steps of the 1,490 famine emigrants. Carletti (2016) explains that collaborative and co-created participatory heritage projects “challenge academia as [the] centre of knowledge production, and disrupt the dichotomy between expert and non-expert” (p. 201). These types of projects begin to engage the public in interactive narrative creation and they can become involved in forming an understanding of the past.

Although the *Open Monuments* and *National Famine Way* websites aim to continually add content to the narratives and engage the public, they both face the challenge of the content becoming stale or appearing inactive due to the public engagement being promoted primarily at the in-person events. Both websites follow a Tree narrative structure (Ryan, 2015), which also limits the virtual experience. The *National Famine Way* website includes more narrative, but it does not provide users with the agency to directly contribute narrative content to the website as the *Open
Monuments project does. As Grabowska (2017) notes, many cultural-heritage focused websites function as databases, displaying thousands of searchable artefacts for public access and as a result, after the initial events and publicity, they tend to become “ghost websites” presenting little reason for users to revisit the website. As these two projects discussed demonstrate, public participation possible to aid the co-construction of cultural heritage narratives, and developments in IDN theory and practice could help encourage re-visits to the digital resources. Considering virtual museums and digital humanities projects have more limited abilities to include narrative, the genre that is applied to the case study on cultural heritage in this thesis is interactive documentary.

2.5.4 Interactive Documentaries for Location-based Heritage

There are few existing interactive documentaries (iDocs) with a cultural heritage focus. The lack of iDocs for cultural heritage exploration indicates that to date, this genre of is a novel area for investigation. There are many examples of audio-visual presentations and dissemination of cultural heritage in the form of digital archives (Dimoulas et al., 2013), such as Europeana (https://www.europeana.eu/en). However, these interactive digital archives often lack narrative and do not follow the genre conventions of interactive documentary (iDoc). An example of a cultural heritage iDoc is Storymap. Storymap was created by two Dublin filmmakers to persuade an international audience that there is more to the city than the negative press about unemployment, high living costs, and brain drain (Storymap, 2017). Storymap has multimodal content about Dublin, including a Google map, graphics, text, and videos of untold stories captured through oral storytelling, which is a traditional cultural practice in Ireland. What it is lacking is a narrative structure because the hyperlinks to further videos do not guide the user along a central theme nor through a particular neighbourhood, but lead to different topics in different locations. The map interface provides many possible entry points into the narratives, which are colour-coded by topic albeit not hyperlinked by topic. Thus, Storymap functions more like a network structure of connected nodes of autonomous narratives (Ryan, 2015) or an archive of video clips. Furthermore, the Storymap website has not been updated with new narratives since it was published and it does not provide users with any agency to participate in narrative creation.
In terms of cultural heritage narratives falling within the iDoc genre, they thematically tend to focus on specific locations, such as a nation, historic area or city. For example, referring to a prominent collection of iDoc projects, a search on the MIT Docubase (docubase.mit.edu) returned seven iDocs related to heritage. The iDocs focused on themes of preserving cultural heritage (*What they destroy, we will build again*; *Resurrection of ZIG; Gallery of Lost Art*), national heritage (*Zikr: A Sufi Revival; Immigrant Nation*), and specific heritage sites (*96 Acres Project; City of Memory*). *City of Memory* (2008) is a “dynamic story map of New York City curated by the cultural heritage institution, City Lore” (Barton, 2020). The *City of Memory* (2008) documentary features archives collected from visitors who wrote down their memories on paper and thumbtacked them to the address/location of where the story took place. The stories chronicle the city’s inner life and are linked chronologically (Barton, 2020). Similar to *Storymap* (2017), *City of Memory* (2008) has a map interface with location-based coloured dots (cityofmemory.org). The two colours represent the category of authorship with the orange-coloured dots linked to stories created by City Lore and blue-coloured dots linked to stories created by users. Clicking on a dot opens a pop-up menu with a video, a text description, and links to related stories. Users can also navigate the stories based on categories, such as “newest tours/stories,” “staff favourites,” and “most viewed,” etc. *City of Memory* (2008) also has a network-like narrative structure. Unlike *Storymap* (2017) it provides an introduction on how to use and navigate the map of stories and invites participation through a “add a story” button.
that opens a web page with specific prompts (i.e., questions) for the user to fill in through an online text-based form.

As a final example, the 96 Acres Project covers the Cook County Department of Corrections, a pre-detention facility in the United States that spans 96 acres of land, includes several buildings and sees approximately 100,000 pre-trial detainees pass through the jail annually (96acres.org/cook-county-jail). The project began in 2012 and consisted of “a series of community-engaged, site responsive art projects” (Ding, 2017). The narratives were communicated in many forms including zine-making workshops, oral history archive, videos projected onto the jail wall, and gallery exhibits and communicated themes of space and power, justice, civic action, contested public space, and marginalised groups (Ding, 2017). The 96 Acres Project was a transmedia interactive documentary because it involved many smaller narrative projects and artworks in the same location/space, and therefore each project had an individual narrative structure or narrativity. The 96 Acres Project also had a more open-ended online form where users could type up or upload a document to submit their story. Collectively, these location-based interactive documentaries show a high usage of multimodal content, looser or more interactive narrative structures beyond the branching/tree narrative structure, and a simple method of prompting participatory contributions from the public. These examples also showed that iDocs for heritage are well-suited for location-based narratives and they evoke more thematic narrativity through the diverse viewpoints, voices, and modes in which the many narratives are presented rather than presenting a chronological or single story path.

2.6 Summary of Digital Narrative Genres

This chapter showed how narrative conventions have evolved and have often been remediated from print into digital genres. As the area of IDN studies has grown, a number of new genres have emerged. This has called for advancements in the disciplines interested in the cross-over of narrative and digital interactivity, namely narratology and ludology. IDN expansion stresses the need for further specifying the elements under study, such as defining the many different components of narrative, the perspective from which narrative is defined and applied, the affordances of different digital media, and the increased possibilities for narrative structures and levels of interactivity. Approaches and concepts from narratology and ludology were
merged in the context of media studies into a Ludonarrative Toolkit that serves as a method for analysing the media-centric qualities that have impacted different digital narrative genres. For example, interactive fiction began by incorporating multimodal content into a hyperlinked branching narrative structure. From there, more complex genres of IDN emerged that involved both multimodal and cross-media narratives in the form of transmedia storytelling and alternate reality games. The current state of IDN research has mostly focused on fiction genres as evidenced by there being fewer publications and the lesser-known productions of non-fiction narrative. However, the iDoc genre has grown over the last decade and also draws from the conventions of its predecessor—documentary film.

Examining how IDN genres have been used in cultural heritage contexts, the most frequent are serious games and mobile apps, immersive and virtual museums, participatory digital humanities projects, and interactive documentary formats. The selected examples show that a variety of scholars and creatives are experimenting with cultural heritage narrative content in the digital medium. However, as was demonstrated by drawing upon the Ludonarrative Toolkit for analysis, with experimentation comes the challenges of creating an intentional narrative structure, providing users with the agency to make choices to personalise their experience, and eliciting further participation or action. As the number of digital products has increased in GLAMs and academia, there is a need for a theoretical and empirical investigation into how non-fiction IDNs, for cultural heritage, could be created and evaluated to better communicate the intended rhetoric and involve public participation. The following chapter expands IDN theory to provide a framework that can be used by future non-fiction IDN creators in order to reduce the need for experimentation or trial-and-error with digital media, navigate through the narrative paradox, and to provide guiding principles for how to create purposeful and persuasive emergent narratives.
Chapter 3: Theoretical Framework for Creating Non-fiction IDNs

This chapter aims to address the existing gaps in the theory and practice of creating and evaluating interactive digital narratives (IDN). Koenitz et al. (2013) outlined the beginnings of an IDN theory but did not provide a comprehensive framework that formally identifies the “wicked problem” and a possible solution (Mateas & Stern, 2005) to IDN design. Thus, Koenitz et al.’s (2013) IDN theory is expanded into a framework for the creation and evaluation specifically of non-fiction narratives. This expansion is achieved using a transdisciplinary approach by drawing upon digital rhetorical theory and narratology supplemented by the concepts from media theory and human-computer interaction (HCI). The following seven-phase IDN theoretical framework aims to provide guiding principles for the purposeful creation of personalised emergent narratives for cultural heritage (with a primary focus on tourists). This framework takes into consideration digital participatory cultures, provides a structured evaluation framework, and “would support the comparison of different solutions, the emergence of best practices and the reuse of components, and it would lead to faster progress in the field” of personalising digital cultural heritage (Ardissono et al., 2012, p. 90). Although the seven-phase theoretical creation framework and evaluation model were motivated by a contextual application to the cultural heritage sector, they were developed to apply to variety of non-fiction IDN genres.

3.1 The Beginnings of IDN Theory

The move towards an IDN theory – first proposed by Koenitz (2010) – was intended to be applicable to all different IDN formats in both fiction and non-fiction genres. Koenitz’s (2010) IDN theory, based on an analysis of different genres, showed that IDNs are comprised of the three common components: the system, process, and product. An IDN is “an expressive digital narrative form realised in a system [sic] which contains potential narratives and is experienced through a process [sic] that results in products [sic] that represent instantiated narratives” (Koenitz, 2010, p. 180). Koenitz (2010) describes instantiated narratives as “the different results or narrative products from the same source (the system) through a participatory process” (p. 180).
Rather than using Koenitz’s term, instantiated narratives, to describe the products of IDN, the term *emergent narrative* is used in this thesis because it self-sufficiently communicates how the resulting narrative emerges from the process of user participation and it is also widely used by other scholars (Louchart & Aylett, 2004; Swartjes & Theune, 2006; Walsh, 2011; Conlan et al., 2013; Lucat & Haahr, 2015). The IDN system, process, and product provide the theoretical foundations that are expanded upon in this chapter.

The IDN system is “the digital artefact, as it exists on a digital storage medium combined with the hardware on which the artefact is executed” and the system contains *potential narratives* (a term used by Monfort) or what Koenitz (2010) calls *protostories* (p. 133). A protostory is a prototype, or a procedural blueprint, for the space of potential narratives contained in an IDN system (Koenitz, 2010, p. 133). A protostory includes the computer program (code and interactive interface) and the “artistic intent that enables a participatory process of instantiation [i.e., emergence] that results in the realization of potential narratives” (Koenitz, 2010, p. 133). IDNs have multiple protostories because users must be presented with interaction opportunities or agency to define and shape the process of producing an emergent narrative product (Koenitz, 2010, p. 180). The IDN process considers the role of the user in producing the emergent narratives from the IDN system. The user “speculates about the consequences of her actions for the narrative, assesses her level of control, and as a result formulates and executes strategies of interaction” (Koenitz, 2010, p. 180). The user navigates through the *narrative design* which “includes the segmentation and sequencing of elements and the connections between them” (Koenitz, 2010, p. 181). Koenitz (2010) uses narrative design in place of the term plot because an IDN system contains many protostories that have both structure and content rather than a single plot (p. 181). The narrative design has sub-structures or *narrative vectors*, which are not isolated but are connected to preceding and following parts of the narrative (Koenitz, 2010, p. 181). Instead of using Koenitz’s (2010) term narrative vectors, this thesis applies the term micro-narratives (Ryan, 2015) to refer to the smaller narrative branches that connect with the larger macro-narrative of the whole IDN system. In non-fiction narratives, and particularly cultural heritage, there may be many micro-narratives that contribute to the overall macro-narrative and they may involve different historical figures, times and places. Koenitz (2010) compares...
narrative vectors to plot points, and in the case of cultural heritage there is not one single narrative. Thus, the combined micro-narratives become plot points of the macro-narrative. As IDN systems contain multiple protostories to interact with, the narrative design (i.e. structure) becomes increasingly important for maintaining immersion because opportunities for interaction raise the issue of the narrative paradox. Koenitz (2010) concludes that the IDN system, process, product and related vocabulary “form the beginnings of a more fully developed theory” (p. 184), which this chapter aims to expand for the theory’s applicability to non-fiction genres.

Considering this outline of IDN theory as a basis to build upon, three possible approaches for its future development that Koenitz et al. (2013) suggested are: (1) a pragmatic semiotic approach to describe how meaningful experiences emerge from user interaction and the development of schemata for different genres; (2) a medium-centric approach to understanding IDN as an artefact and its wider application; and (3) examining player emotions in different contexts (p. 25-30). This thesis takes a medium-centric approach to investigate the potential for expanding IDN theory for non-fiction genres. Koenitz (2014) also identified five requirements that are needed to establish further IDN theory including: (1) a common vocabulary that can be understood by scholars from different disciplines; (2) an open-source system for IDN production to avoid duplicating scholarly efforts of creating new authoring software; (3) preserving sustainable software so that experiments can be repeated, expanded, and tested further; (4) a focus on the creative process (authorial needs) of producing IDNs to avoid toolmakers from becoming the content creators; and (5) the crucial consideration of the user experience because they ultimately determine IDN success (p. 134-138). To address these requirements, the following expanded IDN theoretical framework will: (1) use a vocabulary that aims to be understood and applicable across disciplines, (2) develop a systematic method of non-fiction IDN creation and evaluation to increase repeatability and thereby enable future comparative research, and (3) consider the user experience throughout all three phases of IDN development (system, product, process). The areas that are beyond the scope of this thesis are the development and preservation of open-sourced authoring software.

As this thesis focuses on the non-fiction genre, rhetorical theory is combined with narratology to provide the guiding principles for an expanded IDN theory, reinforcing Koenitz’s (2015) argument that researchers who consider existing
narratological traditions would provide “a common ground for discussion with scholars in the humanities” (p. 10). The expanded theory aims to increase the possibilities for comparative research by providing a clearly defined method of IDN creation and evaluation.

3.1.1 Expanding IDN Theory with Digital Rhetoric and Narratology

Previous research on emerging forms of IDNs has focused mainly on fictional genres, such as interactive cinema, transmedia, and video games. Laurel (1991) – cited as one of the first scholars to address the non-linear dramatic structure afforded by computers – applied Aristotle’s *Poetics* (e.g., enactment, pattern, language, thought, character and agency, and plot) to computational narratives in fictional dramas of tragedy, comedy and melodrama (Laurel, 1991). Non-fiction IDNs can also make use of a non-linear structure, but they have different compositional considerations than fiction genres. Many non-fiction IDNs are designed with a particular rhetorical purpose (e.g., to elicit empathy or educate) and thus, classical rhetoric, developed in the fourth century BC, provides principles that can be modified, updated, and applied to digital narratives of the twenty-first century. Classical rhetoric is associated with oral speeches for public persuasion, but as new media developed, scholars have revised classical rhetoric into other rhetorics, such as visual, digital, and procedural. Rhetorical theory “is a situated and applied art, it generates principles, not rules [sic]. The difference is significant: principles are always interpreted and adjusted for situations (and rarely survive in pure form); rules circumscribe absolute boundaries” (Porter & Sullivan, 1994, p. 115). The current state of digital rhetoric stands to benefit from critical engagement with existing theories and methods from other fields (Eyman, 2015). That being so, media and narrative studies are merged in this thesis into digital rhetoric to provide new insight into the creative practice of non-fiction IDNs.

The argument towards a unified theory of digital rhetoric was first proposed by Zappen (2005). Digital rhetoric, Zappen (2005) explains, is an amalgam of more-or-less discrete components, such as self-expression and collaboration, the affordances and constraints of digital media, and the formation of identities and communities. Boyle,

37 Classical rhetoric is defined as “the art (techne) of finding out the available means of persuasion” (Aristotle as cited in Eyman & Ball, 2014, chapter 2, para 14)

38 Digital rhetoric involves the application of rhetorical theory to digital texts and performances (Eyman, 2015, chapter 1, para 4).
Brown, and Ceraso (2018) argue that there has been a transformative encounter between digital and rhetorical theory. Digital rhetoric considers how the digital medium affects the ability to persuade or achieve a narrative goal. Although digital rhetoric has resulted in ongoing dialogue and negotiations among writers, audiences, and institutions, “it focuses on the multiple modalities available for making meaning using new communication and information technologies” (Hocks, 2003, p. 632). Digital rhetoric is still not recognised as a single unified theory and there are relatively few scholarly publications that discuss digital rhetoric specifically. Bruner, Mckean, O’Gorman, Pitchford, and Weickum (2017) reviewed the four main scholarly books on digital rhetoric (Eyman, 2015; Pfister, 2015; McNely & Teston, 2014; Peters, 2015) and concluded that while providing useful insights “these books do not add up to offer a unified theory or method” nor do they provide a “comprehensive account of rhetoric in new media” (p. 345). Bruner et al.’s (2017) analysis showed that: new media audiences participate in producing content (e.g., social media) rather than merely reading or circulating content and because of this, the invention becomes a work in progress (Pfister, 2015); researchers should strategically select the digital tools applied because the methodology shapes the approach to an object of study (McNely & Teston; 2014); and due attention should be paid to cultural, historical, and metaphysical contexts of human nature in relation to media use because media create meaning in addition to the content (Peters, 2015).

Digital rhetoric thus considers the pertinent aspects of digital culture as discussed (in Chapter 1 and 2) in relation to how participatory culture, multimodality, and the digital medium impact meaning created from IDN experiences. Considering the current state of digital rhetoric, Boyle et al. (2018) conclude that digital rhetoric is a transdu ctive process involving “culture, technology, and biology along with many more registers” and it cannot be located in any one subject, object, or discipline (p. 258). Thus, digital rhetoric is a transdisciplinary theory that can be applied to any non-fiction genre of IDN. Applying rhetoric to IDN creation can help non-fiction creators release new works with higher confidence that the desired communication goals will be achieved. A key impact on digital rhetoric in today’s society is the fact that new

media audiences participate in production; thus, invention becomes a work in progress (Pfister, 2014) and this has changed the way digital narratives are created. As digital narrative experimentation is becoming more common and growing across the creative industries, a merger of digital rhetoric and narrative theory can aid future creative practice.

Narrative and rhetoric have been examined both as separate theories and as integrated in three main areas. Firstly, it has be addressed in rhetorical narratology—a practice of literary criticism and analysis; secondly, in rhetorical discourse which examines narratives within communications; and finally, rhetoric has been applied to digital storytelling focusing on the strategic use of narratives to maximize specific communicative effects (Iversen, 2014). Iversen (2014) argues that these earlier theories implicitly understood life narratives as stable, autonomous and monoperspectival entities, and ignored that in “real, unfolding lives, narratives are often dialogical, multi-perspectival and fragmented” (para 34). These fragmented experiences are pivotal to digital media because many IDNs are navigated across different platforms and society is increasingly demanding multiple perspectives. Therefore, these socio-cultural changes in terms of valuing multiple perspectives and using different media need to be considered in developing a greater understanding of how to create persuasive non-fiction IDNs.

The three components of IDNs, the system, process and product, were introduced by Koenitz et al. (2013) in that order and this beginning of IDN theory has been collectively referred to as the “SPP model” in a later study by Roth, van Nuenen, and Koentiz (2018). However, as mentioned in Chapter 1, this thesis aims to take a bottom-up approach of remixing content from different sources (including UGC) and so the “SPP model” is further expanded in the following sections by first considering the process, then the product, and finally the system. The IDN process is discussed first because understanding the current and dynamic socio-cultural context of participatory cultures is necessary for creating persuasive non-fiction IDNs. The IDN process draws from rhetorical narratology and theories related to the reader experience. The IDN product is discussed second because in order to create purposeful narrative communications, rhetorical goals need to be established to help focus the project and identify evaluation measures to determine if the desired end result was achieved. The IDN product considers how Aristotle’s modes of persuasion (ethos, pathos, logos and
have been impacted by today’s participatory audiences. Finally, the IDN system adapts Cicero’s classical rhetorical canons to provide a theoretical foundation for creators of future non-fiction IDNs. The resulting seven-phase theoretical framework was then used to develop an IDN prototype on the selected case study of this thesis, the UNESCO World Heritage Australian Convict Sites, to demonstrate how it can be applied in practice.

3.2 IDN Process: Participatory Culture as Procedural Rhetoric

The focus of this section of the IDN theoretical expansion is how the author-reader relationship has changed in the digital medium to a process of user interaction. The author-reader relationship has been addressed in rhetorical narratology, reader-response theory, transactional theory, and phenomenology, but these theories were based on printed texts and literary fiction. The print-based foundations need to be considered in the theoretical expansion of non-fiction IDN process and this can be done by drawing upon human-computer interaction (HCI), procedural rhetoric (Bogost, 2013), and artificial intelligence theory (Szilas, 2015). These digital-focused theoretical concepts have been combined to form a new author-reader relationship in the digital medium, namely the Creator-Produser Transaction Model.

3.2.1 Terminology for the Participants in Digital Narratives

Rhetorical narratology examines the interaction of author, text, and reader (Sommer 2009, p. 89) and conceives of narrative as a purposeful communication act (Phelan 2007, p. 203). Rhetorical narratologists developed a model of communication involving several participants—the author, implied author, narrator, implied narrator, reader, and implied reader (see Appendix 2 – Rhetorical Narratology Participants in Narratives). Since these participant roles were developed by narratologists working with literary fiction in the print medium, they need to be reconsidered in the context of IDNs. Rimmon-Kenan (1983) summarises the communication path of Chatman’s (1978) model in Figure 12. In response to Chatman’s (1978) model, Phelan (2013) writes, “this model describes only a special case of narrative communication, one occurring along only one of several channels that print narrative provides” (p. 51). Here, the one channel he refers to is what is commonly called the “traditional one-way” or “linear communication structure” by media and communications scholars.
Phelan (2013) argues that the model is “unable to capture the ways in which an author can create synergy between or among different channels and construct communications that are greater than the sum of their parts” (p. 51). He exemplifies this point with a printed text (i.e., Faulkner’s *The Sound of Fury*), but his argument is also true for IDNs because they have varying narrative structures and can be greater than the sum of their parts (as in the case of transmedia narratives).

**Figure 12. Chatman’s (1978) Communication Model of Narrative Participants**  
(as cited in Rimmon-Kenan, 1983, p. 86)

Following Chatman’s (1978) logic, if a communication model of the possible narrative participants was created for IDNs, it could include content curators, authors/writers, designers, developers, artists, composers, filmmakers, users, and perhaps the implied versions of these. However, as Phelan (2013) explains, for rhetorical narratology to move forward “we cannot satisfactorily revise Chatman’s model simply by adding new entities to it” (p. 51). Applying rhetorical narratology to IDNs needs to look beyond the individual roles and move towards a more holistic view of the process of author-reader communication. Koenitz et al. (2013) write that “IDN bestows co-creative power on its user through interaction and therefore reshapes the relation between creator, work and audience in a way that far surpasses aspects of interpretation and reader-response theory, but whose exact extent is a subject of scholarly debate” (p. 2). The user is part of the process of co-producing rhetoric because they must pursue it through their interactions with the digital narrative. In IDNs the “lines between the author/designer and reader/player become fuzzy: the author/designer builds the world and creates a set of rules and scenarios, but the reader/player directs the actual story that unfolds” (Skains, 2010, p. 104). Considering this situation, how “should we understand the processes by which authors and readers work together to achieve self-expression or creative contribution?” (Zappen, 2005, p. 322). Rather than adding new entities to Chatman’s (1978) model for the context of
IDNs, the participants in digital narratives need to be redefined, the process of their interaction in the digital medium needs to be modelled, and how authors and readers work together to achieve rhetoric through emergent narratives needs to be explained, which is what the following expansion of the theory behind the IDN process will do.

To adapt the author-reader transaction for non-fiction IDNs, a Creator-Produser Transaction Model is proposed. The terminology of creator and produser aims to eliminate confusion as to who and what these roles entail and mitigate terminological differences across the disciplines. To provide an overview of the challenge of selecting transdisciplinary definitions to describe this transaction, Wei and Wei’s (2006) model of communication serves as a reference to highlight the different terminologies. Although Wei and Wei (2006) did not make the connection themselves, the roles they identify are aligned with their common usage in the disciplines of computer science, literary/composition studies, narrative studies, and new media/communication studies respectively (see Figure 13).

Figure 13. Communication Model (Wei & Wei, 2006) and Associated Disciplines

![Diagram of the communication model and associated disciplines.](image)

The terminology that describes the roles in IDNs is the latter of artist/designer, (digital) work, and audience/user which are commonly used by media scholars, but these terms also pose issues. Artist/designer is problematic because the creation of a non-fiction IDN may involve, in addition to artists/designers, a team of authors, content curators/experts, and programmers. Therefore, content creator(s) is proposed because content\textsuperscript{40} can encompass textual content, graphical content, photographic content.

\textsuperscript{40}Content (noun) is defined as “the things that are held or included in something” (OED, 2018).
content, video content and other modalities (e.g., augmented reality, data, geographic information, etc.) and creator\textsuperscript{41} could be applied to authors, editors, curators, photographers, videographers, animators, or whoever is involved in the IDN creation. Digital work is accurate and general enough to describe a digital narrative, but it can be further specified to each IDN genre as applicable, such as a transmedia story or video game, for example (as was seen in Figure 5 – The New Writing Universe). Finally, the audience/user role or IDN consumer is the most challenging.

The term audience has generally been used by communication scholars who focus on one-way mass media or transmedia storytelling and it suggests a certain level of passivity; user appears widely in computer science and reader in literary criticism and narrative studies. Player is used by ludologists (and by Koenitz [2010] to refer to the IDN consumer since he primarily works with games). However, the focus of this thesis is non-fiction IDNs, which moves away from the concept of playing towards achieving rhetorical communication. Another possibility to describe this role in IDNs is the term interactor, which has been adopted by interactive fiction scholars because the person engages in a back-and-forth interaction with the digital system (Monfort, 2011, p. 29). However, interactor and, similarly, user do not describe the ability of the IDN consumer to possess the agency or their ability to “define and shape the process” (Koenitz, 2010, p. 180). The term agent is also not sufficient because it has been used by literary scholars to refer to the narrator (Walsh, 1997; Hühn, Pier, Schmid, & Schönert 2009; Shoulson, Garcia, & Badler, 2011) and by computer scientists to refer to artificial intelligence or virtual agents (Rist, Aylett, Ballin, & Rickel, 2003).

Therefore, we look to the concept of the audience-as-participant, which has been examined by communications scholars who have used the terms produser (Bruns, 2007), co-authors (Landow, 1991), participatory culture (Shirkey, 2009), and commons-based peer production (Benkler & Niseenbaum, 2006).

The term produser – a portmanteau of producer and user – is used in this thesis to define the role of the reader/user/audience in IDNs. Produser describes the production of ideas that “takes place in a collaborative, participatory environment which breaks down the boundaries between producers and consumers and instead enables all participants to be users as well as producers of information and knowledge” (Bruns, 2007, para. 8). Similarly, the term prosumer, coined by businessman Alvin

\textsuperscript{41} Creator (noun) is defined as “a person or thing that brings something into existence” (OED, 2018).
Toffler (1980), is often used in industry but focuses more on the consumption and production of products than specifically digital content (Kotler, 1986). Produser is also preferred over co-author or (co-creator) because authorship suggests that the IDN consumer worked with the IDN creators to co-author the original narrative content (i.e. protostories) in the system. However, the agency provided by an IDN may not require the users to contribute new content to the narrative but may offer options for the produser to do so once it is published.\footnote{For example, the term co-author or co-creator would be applicable in IDNs with a level 5 of interactivity.} The term produser clarifies that the IDN consumer is on the receiving end of the IDN system and the process of produsage describes “the collaborative and continuous building and extending of existing content in pursuit of further improvement” (Bruns, 2007, para. 8). Thus, creator-produser is the proposed terminology to describe the roles involved in the IDN process. With the terminology and roles in the creator-produser transaction clarified, the next step is to examine how what has been represented as a linear communication model by rhetorical narratologists (see Figure 12) has become a more dynamic Creator-Produser Transaction Model.

\subsection*{3.2.2 The Creator-Produser Transaction Model}

The IDN process needs to emphasise the produsers’ participation as a potentially continuous, dynamic exchange with the system and its creators. The reader experience has been explored by scholars in multiple different, but related theories, including phenomenology, hermeneutics, and reader-response theory. Reader-response theory specifically addresses the experience and interpretation of narrative rather than more general human experience as defined in phenomenology\footnote{Phenomenology (founded by Husserl) is “the study of lived experience or the life world […] lived by a person, not the world or reality as something separate from the person (Valle et al., 1989). This inquiry asks ‘What is this experience like?’ as it attempts to unfold meanings as they are lived in everyday existence” (Laverty, 2003, p. 22).} or the interpretation of language as defined in hermeneutics\footnote{Hermeneutics (founded by Heidegger) is an “interpretive process that seeks to bring understanding and disclosure of phenomena through language” (Laverty, 2003, p. 24).}; therefore, it provides a theoretical basis upon which to examine the role of the produsers in IDNs. Reader-response theory, Tompkins’ (1980) explains, “is not a conceptually unified critical position, but a term that has come to be associated with the work of critics who use the words reader, the reading process, and response [sic] to mark out an area for investigation” (p. ix). Theorists including Rosenblatt (1938), Iser (1972), Bleich
(1975), Holland (1975), and Fish (1980) established that readers make meaning and how they do so (as cited in Harkin, 2005, p. 422). There are three main positions scholars take within reader-response theory, those who privilege the authors as guiding the reader’s interpretation, those who emphasize that the readers create their own subjective understanding of texts, and those who occupy the middle and see reading as a negotiation between the text and the reader (Brooks & Browne, 2012, p. 76-77).

As the reader participates in creating meaning through their interactions with an IDN, the middle position, covered by Rosenblatt’s Transaction Theory, can be used to further explain the produsers’ role in the creator-produser transaction.

Transaction theory emphasises that the reader is active rather than passive and that they interpret/act on the text (Rosenblatt 1969, p. 43). The theory covers the initial reading process, the criteria of valid reader interpretation and evaluation, and it questions the context of works from different periods or cultures (Rosenblatt 1985, p.103). Transaction theory also considers the wider context, such as “issues of validity of interpretation, questions relating to texts from different periods or cultures, and criteria of evaluation” (Rosenblatt, 1969, p. 103). Rosenblatt (1969) argues that the term “transaction” accounts for the total situation as an ongoing process, it “frees us from notions of the impact of distinct and fixed entities” and underlines the reader and text as engaging in a dynamic reading transaction (p. 45). She further distinguishes transaction from interaction whereby interaction is “the impact of separate, already-defined entities acting on one another” and is applied in reference to the machine and transaction refers to an organic “living organism” and describes an ongoing process in a total situation rather than a stimuli-response situation (Rosenblatt, 1985, p. 97-98). Transaction theory explains the narrative’s higher-level impact on the IDN produser or their personal interpretation/meaning-making, which is understood to be an ongoing process influenced by their current historical-cultural situation (i.e., context). What is missing from Rosenblatt’s theory, is the more nuanced user experience, or phenomenology of the transaction, which Iser (1972) discussed in more detail.

The reader’s phenomenological experience includes the reader’s feelings of involvement in the events in the text (e.g. immersion), frustration, or surprise; their imagination in recreating the world presented; and their ability to make connections by filling gaps/interruptions left in the text (Iser, 1972, p. 283-192). Iser (1972) argued that a
text only takes on life when it is realized [sic], and furthermore the realization [sic] is by no means independent of the individual disposition of the reader […]. The convergence of text and reader brings the literary work into existence, and this convergence can never be precisely pinpointed, but must always remain virtual, as it is not to be identified either with the reality of the text or with the individual disposition of the reader (p. 279).

Iser’s (1972) argument reinforces Koenitz et al.’s (2013) description of the IDN process where the produser is involved in producing the emergent narrative. Iser believed that the “reader must act as a co-creator of the work by supplying that portion of it which is not written but only implied” (Tompkins, 1980, p. vx). The reader’s activity is a fulfilment of what lies within the structure of the work, but Iser does not grant the reader autonomy or independence from the text’s constraints (Tompkins, 1980, p. vx). In IDNs, the produser can only make choices and act with the agency that the creator provides (i.e., narrative constraints). In printed narratives, a selective reading process where “the potential text is infinitely richer than any of its individual realizations [sic]” (Iser as cited in Tompkins, 1980, p. 55). This is especially applicable to IDNs because they result in emergent narratives – or unique realisations – for each produser and in the case of transmedia narratives where the whole is greater than the sum of its parts.

Rosenblatt (1985) argues that the “reading event should be seen in its total matrix” (p. 104) and transaction theory accounts for the overall IDN process of interactivity between the produser, text, and the creator. Iser’s (1972) phenomenological focus accounts for the immersive and experiential qualities of the IDN and can be considered in relation to the user experience (UX design). Transaction theory and the phenomenology of reading impact the produser’s perception of the rhetoric (e.g., ethos, pathos, logos) and ultimately, how meaning is created from their interaction with the IDN. However, it is important to note that in some IDN genres, not only is the creator-produser involved, but the system itself can also have agency through the use of artificial intelligence (AI) and adaptive technologies. In these cases, the transaction between the creator and produser is also mediated by the IDN system.

The three-way transaction between creators, produsers, and digital systems is addressed by Szilas (2015) through his models of AI systems. In early AI research, termed one-actor AI, a system was built to model intelligent human functions and then
disseminated and put into action by users (Szilas, 2015, p. 138). The one-actor AI model mirrors Chatman’s (1978) linear communication model, where the author first wrote the text, which was then distributed to readers. In IDNs, the creators can continually revise the existing digital content and the produsers could, if given the opportunity, also contribute to the narrative; thus, the creation process does not necessarily end. In two-actor AI deployment, the system is in “direct interaction with a user” where the user’s input results in system output (Szilas, 2015, p. 138). The two-actor model is often seen in automatic recommendation systems, intelligent tutoring systems, and search engines (Szilas, 2015, p. 138). In the case of IDNs, Szilas (2015) explains, a third actor intervenes in the system, the author (i.e., creators), and notes that a storytelling/authoring system is not useful if creators cannot populate it with narrative content. Szilas’ (2015) three-actor AI model is applicable to the IDN process because it includes, using Szilas’ terms, the role of the “author,” “end-user” and “AI system” as seen in Figure 14. The three-actor model considers the system design, as determined by the authors, and the process of user interaction not as a linear process, but as a “participative methodology” so that all actors are involved throughout the creation process (Szilas, 2015, p. 140). This three-actor model visually mirrors the theoretically discussed Creator-Produser Transaction Model. Adapting Szilas’ (2015) three-actor model to IDNs in general (which may or may not include AI functionality) using the transdisciplinary terminology discussed, Figure 15 visualises the creator-produser transaction in the IDN process.

Figure 14. Models of Artificial Intelligence Systems (Szilas, 2015, p. 140)
In this Creator-Produser Transaction Model, content creators have ultimate control of the narrative; they maintain the narrative structure, determine the system rules, and provide the opportunities for produsage. The produsers in theory can interact with the system and content creators either through direct contact or through the IDN system. The content creators and produsers are situated in their own environments and historical-cultural backgrounds, which influence their participation and interpretations. Content creators can consult or interact with produsers before, during, and after they produce the IDN system for an iterative narrative process. As Rosenblatt (1985) explains, instead of thinking of the reading process as linear we have to think rather of a complex network or circuit of interrelations, with reciprocal interplay. Both the ‘bottom-up’ and ‘top-down’ approaches to the reading process need a thorough critical rethinking in the light of the transaction theory of reading, which sees both reader and text as active, but in an organic rather than a linear mechanical, way (p. 101).

The Creator-Produser Transaction Model for the IDN process of meaning-making is similar to the hermeneutic circle, which Gadamer (1960/1998) explains, as involving “a process of co-creation between the researcher and participant, in which the very production of meaning occurs through a circle of readings, reflective writing and interpretations” (Laverty, 2003, p. 30). This Creator-Produser Transaction Model is further supported by the aim of IDNs which is “to dissolve the division between active creator and passive audience and herald the advent of a new triadic relationship between creator, dynamic narrative artefact and audience-turned-participant” (Koenitz et al., 2013, p. 1). However, the Creator-Produser Transaction Model, which is dynamic rather than controlled and linear, raises the narrative paradox, but this can be addressed through an understanding of procedural rhetoric.
3.2.3 The Creator-Produser Transaction as Procedural Rhetoric

Procedural rhetoric, a branch of digital rhetoric, provides “a way to make claims about how things work” (Bogost, 2013, p. 29) and it applies to the process of the creator-produser transaction. Procedural rhetoric involves “using processes persuasively, just as verbal rhetoric is the practice of using oration persuasively and visual rhetoric is the practice of using images persuasively” (Bogost, 2013, p. 28). Written media do not express their arguments procedurally, but instead describe them through modes, such as speech, writing, or images (Bogost, 2013, p. 31). Procedural rhetoric is well exemplified in educational video games where users can learn by doing through a virtual “hands on experience” (Bogost, 2013). Although procedural representation is not the same as actual experience, software and videogames can generate moving images according to complex rules that can simulate real or imagined physical and cultural processes (Bogost, 2013, p. 35). IDNs involve a sense of play, procedurality and rules, and when the system rules coincide with the narrative content, the narrative paradox and the resulting negative experience of ludonarrative dissonance are avoided. IDNs are procedural systems that “generate behaviours based on rule-based models; they are machines capable of producing many outcomes, each conforming to the same overall guidelines” (Bogost, 2013, p. 122). In other words, the creators of an IDN system construct the rhetorical/narrative arrangement in the digital space and determine how produsers can interact with the content (i.e. develop rules) and the results can be multiple different emergent narratives.

In avoiding the narrative paradox, produsers should experience their desired level of agency while gaining a cohesive understanding of the narrative theme. If a user is provided too much agency, the narrative will be lost, and if they do not have enough agency, the system becomes too heavily pre-authored and unidirectional, which could frustrate produsers or deny them the personalised experience they desire. Murray (2012) says that agency is a more useful and specific design goal than interactivity because the designer can create agency by shaping the rules of the computer processes and user interaction so that human expectations and actions match those of the computer (p. 101). A balance of user agency and narrative structure must be provided in a rule-based IDN system so that the creator-produser transaction is immersive. To achieve immersion, Pratten notes that the “right content” should be delivered at the right time rather than presenting everything to the user early and
overwhelming them with content (as cited in Sánchez-Mesa et al., 2016, p. 12). This alludes to the rhetorical concept of *kairos*, which in ancient Greek meant the “right or opportune moment” (Sheridan, Ridolfo, & Michel, 2012, p. 6). Koenitz (2015) argues, in order to keep someone intrigued, the IDN system needs to provide the “initial interest principle” or the strategies for initial engagement and “continued motivation” by providing for example, “ambiguous choices, small narrative gaps that leave space for interactors to fill and the temporary removal of control so that the interactor feels more special about being in control at other times” (p. 55). Providing the right balance between interactivity and immersion in the creator-produser transaction will lead to the pleasure of agency and could evoke an emotional response to the narrative. Bogost (2013) discusses procedural rhetoric in the context of video games, but many video games are created primarily as an entertainment experience. However, serious games, for example, use “procedurality to make claims about the cultural, social, or material aspects of human experience” and “when we talk about making claims or arguments, we enter the domain of rhetoric” (Bogost, 2013, p. 123). Different non-fiction IDN genres can make claims about cultural, social or material aspects – a process achieved through procedural rhetoric – and result in the emergent narrative products that can then be evaluated as to whether or not they achieved the desired communicative effect.

### 3.3 The Product: Evaluating Emergent Narratives

The production of persuasive IDNs requires a method of evaluation to test whether the communication goals were achieved with the system design, if the techniques/rules employed avoided ludonarrative dissonance in the process, and what meaning(s) were made from the product (i.e., emergent narratives). A formalised evaluation framework is also needed to expand IDN theory and it could help future scholars develop customised evaluations for individual projects and enhance the comparability of results. The modes of persuasion (ethos, pathos, logos, and kairos) are used in this thesis as an overarching frame for the evaluation of IDNs. The modes of persuasion have been previously considered in the context of interactive narrative by Chen (2014) who argues that “interactivity presents the essential element of rhetoric: the art of persuasion or convincing; it further epitomizes the three rhetorical elements: ethos, logos, and pathos” (p. 126). He draws parallels between ethos and the designer, pathos and the “player,” and logos and multimodal content (Chen, 2014, p.
Expanding the modes of persuasion to any IDN genre, this thesis argues that ethos is achieved through the creator-produser transaction (IDN process), pathos is elicited through the presentation of multimodal content and the experience of agency (IDN system), and logos pertains to the emergent narrative (IDN product). Finally, kairos is also relevant to IDN in terms of creating a positive produser experience through the IDN system design. The modes of persuasion can thus, frame measures of evaluation for IDN products.

3.3.1 The Modes of Persuasion and Digital Narrative Audiences

The modes of persuasion provide a classical foundation for reflection on the current impacts digital media narratives have on today’s audiences. There are three modes of persuasion, “the first kind depends on the personal character of the speaker; the second on putting the audience into a certain frame of mind; the third on the proof, or apparent proof, provided by the words of the speech itself” (Aristotle, trans. Roberts & Ross, 2010, p. 7). In other words, ethos can be interpreted to refer to the characteristics of the rhetor, pathos to the audience’s reception elicited through the delivery techniques, and logos to the logic of arguments or messages. Building on and drawing connections to the discussions in Chapters 1 and 2, ethos is briefly discussed in the context of how digital media has shifted society’s perception of the content producer and how the audience has simultaneously become producers. Pathos is considered in the context of how multimodal content is increasingly being used and logos in terms of multi-perspective narratives and transmediality. Finally, the often-neglected kairos is contextualised within the nature of procedurality or dramatic agency afforded to IDN users.

3.3.1.1 Ethos: Distrust and the rise of vernacular participatory culture

The explosion of user-generated content (UGC) has resulted in an increasingly participatory culture, where consumers actively participate in the creation and circulation of new content (Jenkins, 2006, p. 90). Along with the democratisation of publishing through Web 2.0 technologies, the value of vernacular narrative increased and put more pressure on producers to establish ethos because of the growing distrust in digital content published by media and other industries. Ethos in a digital context is established or broken through the source (e.g., expertise, skills, motives) which may
not be a single rhetor; it could be a brand, company, or community of social media influencers. Middleton, Hess, and Senda-Cook (2015) state that “rhetorical force/influence are exerted through the totality of rhetorical experiences that form vernacular communities and (counter) public spheres. Such recognition further emphasizes the active role of the audience in rhetorical practice” (p. 13). The digital turn towards participatory culture has resulted in vernacular narratives that become part of the overall rhetoric.

3.3.1.2 Kairos: Procedurality and the ephemeral situation

The colloquial phrase, “timing is everything,” is of high importance in the digital age of real-time information, which raises the rhetorical concept of kairos. Although kairos is complex and difficult to define (Sheridan et al., 2012, p. 6), it can be explained as the sum total of contexts – both spatial and temporal – that encompasses the occasion/situation itself, the genre conventions required, and the delivery the audience expects at that time and place (Sheard, 1993, p. 291). Kairos contextualises or situates human activity, “it delimits choices and sets the boundaries of action by supplying the circumstantial (although often assumed universal) criteria or ‘codes’ – conventions, values, ethics, customs – that guide and confirm decisions and actions” (Sheard, 1993, p. 292). Digital media, particularly those distributed on the Internet, are global, they traverse space, time, contexts and cultures, which have different values, ethics, and customs. Furthermore, IDNs are produced as a result of user interaction with the spatial-temporal narrative design, rules, and structure. Kairos is “the very source of rhetoric’s power to adapt to circumstances” (Sheard, 1993, p. 293). A large area of research on adaptive technologies is personalisation, which involves studying user preferences, behaviours and intentions, modelling content, and filtering recommendations that can lead to more desirable experiences for system users (Gao, Liu & Wu, 2010). Adaptive hypermedia and AI are two methods of how IDN products can emerge differently based on user actions with the potential narratives in the system. The concept of kairos is an important consideration in non-fiction IDNs, as it “denotes the infinite combinations of consubstantial, scenic elements that exist as potentialities of discursive acts. As such, it can never be ‘pinned down’ or reduced to a single one of its components” (Sheard, 1993, p. 306). Kairos serves as a reminder of the numerous factors rhetors (i.e., IDN creators) do not control but determine what is rhetorically possible at a given moment and it draws attention to the connection
between occasion and audience (Sheridan et al., 2012, p. 7). In the context of this IDN research, kairos refers to both the timing of content delivery modalities and narrative choices as well as the context that the IDN is built primarily for, which, in this case study, is to serve as armchair travel (a substitute for in-person travel) while also providing enough rhetorical incentive to inspire produsers to want to experience it for themselves (i.e., a resource for pre-trip planning).

3.3.1.3 Pathos: Multimodality and continued growth of new media technologies

Multimodal digital texts have expanded the choices and means for communication and persuasion in different narrative forms. Each technical or digital production decision is also rhetorical because it has consequences for how a text will be received and used by its intended audience (Sheppard, 2009, p. 128). As Kress (2003) explains “there are now choices about how what is to be represented should be represented: in what mode, in what genre, in what ensembles of modes and genres and on what occasions” (p. 117). These choices differ for each IDN genre and result in different impacts on the pathos experienced by audiences. For example, music can elicit feelings of fear, happiness or sadness; text can communicate detailed information; and audio can be useful to narrate visuals, such as photography. Therefore, rhetors must consider and know which type of content is best suited for each semiotic mode of communication (Sánchez-Mesa et al., 2016, p. 16) depending on the desired effect they seek from the audience. As new media technologies continue to develop, the combination of modalities in a single delivery medium may increase and could lead to new artforms that elicit the emotional responses desired by the rhetors from audiences.

3.3.1.4 Logos: Multiple perspective narratives

In conjunction with the rise in participatory culture, the logos is impacted by the cross-media and paratextual content. The rhetoric around a narrative can change as a result of participatory culture and the multiple perspectives and opinions available in digital media. What is communicated in the paratext can change the rhetorical impact of the original narrative source for better or for worse and thus, the public has power in determining the logos. The Internet has produced a remix culture, which Lessig (2005) describes as “using the fruits of someone else’s creativity” to produce
something new (p. 51). The original narrative producers may choose to directly engage with multiple perspectives by creating a transmedia narrative or remixing in popular paratexts into the “official narrative.” The computer “offers us a multidimensional kaleidoscope with which to rearrange the fragments over and over again, and it allows us to shift back and forth between alternate patterns of mosaic organisation” (Murray, 1997, p. 157). Therefore, a narrative may theoretically never come to an end in digital media and the logos can continually evolve as new perspectives are added.

The modes of persuasion thus, provide guiding principles of rhetorical analysis and can be incorporated into a more detailed methodology for evaluating IDN composition that draws from HCI. Rhetorical choices made by writers are technical in nature and often correspond to HCI principles (Rosinski & Squire, 2009) (see Figure 16). HCI research involves pre- and post-design tasks that are user-oriented and based on the three-step process of gathering user requirements, prototyping, and usability testing (Rosinski & Squire, 2009, p. 152). The suggested evaluation framework continues with the argument that the produsers should be considered in all three components of IDN, the system, process, and product. Therefore, adapting HCI and composition principles to a framework for IDN product evaluation involves getting to know the audience (i.e., produsers) and defining the rhetorical or communication goals. These two building blocks make up the first two phases of the seven-phase IDN theoretical creation framework and are key to evaluating the IDN product (i.e., emergent narratives).
Table 1: HCI Principles and Composition Principles (Rosinski & Squire, 2009, p. 150)

<table>
<thead>
<tr>
<th>Design</th>
<th>Composition Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know Your User</td>
<td>Know Your Audience</td>
</tr>
<tr>
<td>● Who is your user? (Demographics, diversity)</td>
<td>● Who is your reader?</td>
</tr>
<tr>
<td>● What does your user know already? (Expertise level)</td>
<td>● What does your reader know already?</td>
</tr>
<tr>
<td>● What does your user need? (Requirements gathering)</td>
<td>● What does your reader need?</td>
</tr>
<tr>
<td>● What type of system will your user be able to handle?</td>
<td></td>
</tr>
<tr>
<td>● What type of system is your user expecting?</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implement</th>
<th>Strive for Clarity, Make Arguments Obvious</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce User’s Cognitive Load</td>
<td>● Rely on known conventions and constraints for this type of document</td>
</tr>
<tr>
<td>● Design with perceived affordance in mind, including</td>
<td>● Strive for readability through organization and structure of the document</td>
</tr>
<tr>
<td>relying on known conventions/constraints for your type of</td>
<td></td>
</tr>
<tr>
<td>discipline; consistency</td>
<td></td>
</tr>
<tr>
<td>● Develop sensible navigation schemes</td>
<td></td>
</tr>
<tr>
<td>● Organize information effectively for visual perception;</td>
<td></td>
</tr>
<tr>
<td>Gestalt principles of design</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evaluate</th>
<th>Peer-Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test and Iteratively Redesign</td>
<td>● Peer-Response workshops</td>
</tr>
<tr>
<td>● Prototyping</td>
<td>● Writing Center consultations</td>
</tr>
<tr>
<td>● Usability Testing</td>
<td>● Reader Feedback</td>
</tr>
<tr>
<td>● Focus Groups</td>
<td></td>
</tr>
</tbody>
</table>

### 3.3.2 Phase 1: Know the Audience – Model the Produsers

Following on from HCI and composition principles, the purpose of the IDN should be aligned with or checked against produser expectations and needs before it is developed in order to increase ethos. For example, some key questions for IDN creators include: Who is the IDN for? Where are the potential produsers from? Which age bracket(s) do they fall into? What is their level of digital literacy? What information might they know about the IDN topic already and what information do they need to know? And how can the IDN content be personalised for produsers? (Basaraba, 2018). Personalisation enhances the user’s experience and allows content/service providers to dynamically repurpose their offerings for different people or contexts, which makes reuse easier (Conlan et al., 2013, p. 132). As covered in Chapter 2, some adaptive applications in education and tourism have provided a sophisticated level of personalisation including adaptive content selection, composition, and navigation (Conlan et al. 2013, p. 132-133). Personalisation methods can increase the potential replay value of the IDN so that produsers can experience multiple different emergent narratives and allow them the agency to choose the protostories they wish to consume. Common methods of personalisation are user profiling based on user demographic information; content modelling frequently based on keywords; or personalised recommendation to limit the quantity of information presented to users and reduce cognitive load (Gao, Liu, & Wu, 2010, p. 615). Getting
to know the audience, or potential IDN produsers, can be achieved using best practices from personalisation methods.

Methods of interactive design have been previously discussed conceptually by multiple scholars in computer science, HCI and UX design (Kristof & Satran, 1995; Kumar, 2009; Preece, Rogers & Sharp, 2015). For example, “design thinking” or “design innovation” techniques, they aim to prioritise individual users from a HCI perspective to develop systems that service users’ needs where the increased “user value” results in economic success (Kumar, 2009, p. 91). However, the aims of delivering a usable digital system from an economically motivated, service-providing perspective are different from developing a creative work that has provocative narrative or goals of inspiring public participation, for example. Engaging in a research/discovery process of gathering information about potential users (produsers in the case of IDNs) is not brand new, but systematically modelling the best practice steps for developing interactive digital experiences began to take hold with the increase in HCI and personalisation research conducted by computer scientists. Drawing from the best practices outlined in personalisation design methodologies can provide “user models” that can inform how IDN creators develop the protostories (i.e., content models) and how the IDN system can meet or, contrarily, purposefully challenges the produsers’ expectations or requirements. For the specific context of digital humanities projects, Lawless et al. (2016) provided a series of best practices for personalisation that are especially applicable to non-fiction IDN creation and particularly for cultural heritage IDNs, which are the topical focus of this thesis. The key steps in designing personalised systems are to: (1) model users, (2) model content, and then (3) create an adaptive system through the four steps of ‘guiding’, ‘exploring,’ ‘suggesting,’ and ‘reflecting’ (Lawless et al., 2016, p. 175-179). Therefore, subsequent phases of the theoretically-based framework thus, aim to aid creative teams coming from multiple different disciplines, and likely sectors (e.g., professional design agencies, developers, etc.), to collaboratively work together towards creating a cohesive IDN product and user experience that meets the specific project’s narrative goals.

3.3.3 Phase 2: Define Communication Goals/Measures

IDN success can be measured through the rhetorical goals which need to be defined before they can be evaluated in later testing with produsers. For example, is the IDN aiming to communicate a feeling, theme, clear message, specific learning
outcomes, or a call to action (e.g., civic action)? Are there multiple messages being communicated? What type of experience is being created or what emotional response is desired from the audience? Many creators developing IDNs want to experiment with new digital media technologies due to their novelty and because they offer opportunities for engaging and reaching audiences in new and different ways. However, this presents a challenge because if the communication goals are not predefined before the IDN system is developed and tested, then the creators will not be able to determine whether the digital medium itself, content modalities, the interface design, or the narrative content had the desired or an undesired effect on produsers. Researchers can use a variety of evaluation methods to measure and test their narrative communication goals. To date, there have been few IDN studies that involved user testing, but those that exist have applied methods, such as an ethnographic study that had pre-and-post play interviews and gameplay observation (Milam, El-Nasr & Wakkary, 2008); semi-structured interviews post-interaction (Knoller & Ben-Arie, 2009); a post-interaction questionnaire (Roth & Koenitz, 2019; Kolhoff & Nack, 2019); and empirical A/B testing of two different versions of the same IDN (Gantier & Labour, 2017). The most appropriate method of produser testing needs to be determined based on the qualities that the IDN creator(s) want to test and how the data gathering process would allow them to answer their specific research questions. Empirical testing may be useful for UX design and other improvements to the IDN system design, while qualitative testing methods would provide further insight into the produser experience and whether the desired rhetoric (e.g., logos) was achieved through the emergent narratives. As Roth (2019) mentioned, only a few studies exist that evaluate the effectiveness of IDNs, so pre-defined communication goals and measurables would enhance scholarship in the area. Creating purposeful non-fiction IDNs that aim to achieve desired effects can help isolate specific features and inform the types of questions and measures useful for IDN user testing.

3.4 The System: Creating Multimodal Protostories

Many content creators produce a work hoping it will be successful and then release it into the digital world without consulting the potential users in advance (Warwick, 2012). Rhetoric as a theory of communication, with its long history of use and conventions, can help formalise the process of analysing and creating new,
purposeful non-fiction IDNs. As digital narrative genres continue to emerge, it raises new questions within each canon of rhetoric (i.e., invention, arrangement, style, memory and delivery). The classical rhetorical canons are challenged due to issues, such as new terminology and their applicability has been reduced particularly in the memory and delivery canons, which have largely been forgotten in more recent scholarship (Brooke, 2009, p. 29). Brooke (2009) argues that renaming or revising the canons does not replace them but offers new layers of interpretation and amended terminology (p. 43). Eyman (2015) summarises how the classical rhetorical principles can be applied to digital practice, namely invention involves searching networks of information, using multimodal and multimedia tools; arrangement is manipulating digital media and selecting remixing ready-made works; style is the elements of design (colour, interactivity, font choice, etc.); delivery is using systems of distribution; and memory relates to information literacy in terms of knowing how to store, retrieve, and manipulate (digital) information. However, the canons need to be updated and adapted further for their application to IDNs and how these overlap and differ is summarised in Table 3.
<table>
<thead>
<tr>
<th>Canon</th>
<th>Classical Definition</th>
<th>Digital Practice (Eyman, 2015, para 5)</th>
<th>IDN practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Invention</strong></td>
<td>Finding available means of persuasion</td>
<td>Searching and negotiating networks of information; using multimodal and multimedia tools.</td>
<td>Consider the audience’s perspectives, existing content, remixing (i.e., user and content modelling)</td>
</tr>
<tr>
<td><strong>Arrangement</strong></td>
<td>Formalised organisation</td>
<td>Manipulating digital media as well as selecting ready-made works and reconstituting them into new works; remixing.</td>
<td>Narrative structure, interactivity, and the narrative paradox (and potential for ludonarrative dissonance)</td>
</tr>
<tr>
<td><strong>Style</strong></td>
<td>Ornamentation/appropriate form</td>
<td>Understanding elements of design (colour, motion, interactivity, font choice, appropriate use of multimedia, etc.).</td>
<td>UX design, high resolution, branding, multimodal display options</td>
</tr>
<tr>
<td><strong>Delivery</strong></td>
<td>Oral presentation</td>
<td>Understand and using systems of distribution (including the technical frameworks that support varying protocols and networks).</td>
<td>Selecting the IDN genre, software, and hardware</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>Memorisation of speech</td>
<td>Information literacy—knowing how to store, retrieve, and manipulate information (personal or project-based; blogs or databases).</td>
<td>Kairos, the ephemerality of digital productions, revisions via user participation</td>
</tr>
</tbody>
</table>

The five canons are classically presented in a series of ordered steps because oral speeches in ancient Greece, and other traditional rhetoric, were for the creation of one-way communications, but digital media necessitates a change to this linear process. The first adaptation of the canons for IDNs is reframing them into a cyclical, bottom-up approach that also reflects the Creator-Produser Transaction Model (see Figure 17). This revision considers delivery much earlier in the process, arrangement is closely linked to invention and delivery, and the steps are not as definitively separate in digital media. The style canon is renamed to design—a term commonly used across many creative industries producing content in various digital media. The memory canon, while keeping some of its original function, is renamed to updates as is it a common requirement and term used in reference to digital media. Phase 1 – Know the audience, and Phase 2 – Define communication goals/measures, were discussed above in the IDN product evaluation, and the five canons of rhetoric are adapted into Phases 3-7 of the theoretical framework for IDN creation.
3.4.1 Phase 3: Delivery

In classical rhetoric, delivery of oral speeches focused on voice, pacing, gestures and posture, for example (Eyman, 2015). Delivery is not just a transaction but it affects the ability to achieve successful communication (Porter, 2009, p. 208). Digital delivery influences the production, design, and reception of narratives and the ability to achieve the rhetoric (Ridolfo & Hart-Davidson, 2014, p. 36). As digital delivery impacts IDN invention, design, and the reception by the intended produsers, the delivery medium (or media) need to be considered before the creation process begins. Transmedial narratology assumes that stories are affected by the constraints and affordances associated with a given delivery medium. Transmedial narratology “disputes the notion that the story level of a narrative [i.e., fabula] remains wholly invariant across shifts in medium” (Herman, 2010, p. 85). It asks questions such as

what is the narrative potential of media and of the modalities that they encode;
how can the narrative affordances of a given medium be emulated in another medium, what is it that the narratives of a certain medium can do that others cannot? (Ryan, 2016, p. 2).

The use of different multimodalities can impact meaning-making and the medium determines how and which modalities can be incorporated in a narrative. Ryan (n.d.)
explains that the “medium imposes [sic] its possibilities and limitations on the user” and media are selected for their affordances and authors try to overcome their limitations or make them irrelevant (p. 11). An IDN can take full advantage of the medium, ignore the specifics of the medium and use it purely as a transmission channel, fight some of the medium’s properties for expressive purposes or expose latent properties in its medium and expand the expressive potential (Ryan, n.d., p. 13). One of the goals of developing a non-fiction IDN is achieving stronger rhetoric by taking full advantage of the medium.

Making the most of the digital medium involves considering how its affordances (encyclopaedic, spatial, procedural and participatory) can be optimised in IDNs to increase user immersion, interactivity and enhance meaning-making. McLuhan (1964) famously argued that

the medium is the message. This is merely to say that the personal and social consequences of any medium […] result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology (p. 7).

McLuhan (1964) argued that technology impacts society in a way that changes “the scale, pace or pattern” of human affairs (p. 7). The Internet has changed the scale, speed, and method of content delivery. Digital communications can now be distributed across the globe once they are published and this can happen in seconds with the click of a button. The speed of Internet delivery has colloquially been referred to as real-time information. Information can spread almost instantaneously and be updated or edited quickly. The method of delivery has also changed because many communications are delivered across multiple media. Therefore, the delivery should not only consider the affordances and limitations of a single delivery medium but also whether an IDN should be delivered across multiple different media (i.e., transmedia). For example, an IDN could begin in a single medium and, through a snowball effect, expand into other media or it could be designed as an interconnected system from the beginning as a transmedia narrative (Ryan, 2013, p. 363). The selected IDN genre (see Chapter 2 - Figure 2) will inform the media selection and possibilities of delivery.

3.4.2 Phase 4: Invention

Invention in classical rhetoric would have involved the orator doing research, drawing upon their expertise or, in Aristotle’s words, “the art (techne) of finding the
available means of persuasion” (Eyman, 2015, para 14). Invention in digital media involves searching for information and materials to create persuasive works including different multimodal resources (e.g. aural, visual, textual, hypermedia, etc.), the tools/software that may be used, and whether existing texts can be remixed (Eyman, 2015). Essentially the invention considers the overall communication goal (i.e. purpose) and everything that could go into an IDN system to achieve the goal(s).

Bacabac (2015) challenges creators with the responsibility of creating powerful digital rhetoric “where texts, graphics, audios, videos, and other persuasive components are properly arranged to achieve stronger logical (logos), emotional (pathos), and ethical (ethos) ends” and argues that “techno-rhetoricians should also use invention to generate and plan effective contents/avenues in order to meet a wide range of rhetorical contexts” (p. 117-118). The art of storytelling and narrative invention is subjective and difficult to define one specific method for, and the art or techne will need to be determined by those involved in the IDN’s creation. The IDN system invention needs to consider the selection of multimodal content, remixed content, and software selection.

The digital medium is inherently multimodal and the aim of including multimodal content in a narrative is not to disrupt or disturb the reading experience, but to encourage readers to see them as an integral part of the work and enhance meaning-making (Hallet, 2009, p. 136). Examples of multimodality used in printed narratives are text, images, lists, maps, diagrams and statistics, or discipline-specific symbolic languages like mathematical formulae or algorithms (Hallet, 2009, p. 129-131). The aim of integrating multimodal content in an IDN system is to enhance immersion and the narrative’s communicative effect. IDN creators need to first review and gather available multimodal content in the non-fiction genre they are working in and then determine which content, when, and how it should appear. Different modes have different affordances and may fit more readily into one social situation over another and a mode cannot be separated from its cultural, social, affective, or cognitive aspects (Kress, 2003, p. 52). The modalities used would differ for each non-fiction genre such as education, civic engagement, or cultural heritage (the focus of this thesis).

---

45 For example, there are a multitude of established narrative conventions and techniques from fiction that IDN content creators could draw upon, such as E.M. Forester’s (1927) *Aspects of the Novel*, which include story, character, plot, fantasy, prophecy, pattern, and rhythm; creators may also draw upon paratexts, characters as storytellers, style and tone of voice, and structure/gaps, etc. (Phelan, 2014, p. 52).
and according to which modality is more appropriate to communicate the desired rhetoric. The cultural context shapes the method of communication and the current cultural context has moved towards multimodality (Kress, 2003). With the continually developing technologies available such as VR, AR, mixed reality, etc., there is an increasing need for content producers to carefully consider which modes would best carry the intended message as well as how and when they should be displayed to communicate certain messages and intended meaning.

The second consideration in IDN system invention is remixed content. Eyman (2015) discusses remixing under the arrangement principle of rhetoric, but it is argued that in the case of IDNs that remixing should be considered under the invention principle. Many digital products are often built top-down (Warwick, 2012; Ardissono et al., 2012), but if remixed content is considered during invention, it gives the audience a voice early in the development process and converges content from professional media producers (top-down) and media consumers who are also producing content—produsers (bottom-up) (i.e. UGC). In addition to the move towards multimodality within digital culture, there has also been an increase of remixing or re-forming existing communications into new communications. As Lessig (2005) says, the Internet has produced a remix culture, but notes that with remixed content “there’s no guarantee that it does any favors [sic] to the [original] work” and there is no requirement that the remix treats the work respectfully or kindly because “the freedom to remix is a freedom to ridicule or respect. Fairness is not the measure. Freedom is. […] Remixing is how culture gets made” (p. 51). The process of remixing is a form of media convergence, participatory culture and is often an integral part of digital communication, and thus it needs to be considered when developing IDN systems. Some IDNs have been completely developed as remixes (e.g., fan fiction, transmedia adaptations of classic literature, Wikipedia, etc.). Remixes are often generated by produsers or members of the public who include commentary, opinions and creative ideas. Remixes should be gathered and reviewed for inspiration or possible inclusion in non-fiction IDN systems in order to reach further and understand the public (i.e., potential audience). It is also important to note that once a new IDN is created, it may later be remixed by users because digital media support and encourage participatory culture. Possible future remixes can also be reviewed in Phase 7 – the “update” principle of system creation.
The third and final media-centred consideration for inventing an IDN system is selecting which software (referred by some scholars as authoring tools) to use because it can have rhetorical implications (McNely & Teston, 2014). The software can place technological limitations to creative expression and provide unforeseen opportunities during the content gathering process. Therefore, the modes, medium and ability to represent them in the IDN system need to be considered at the invention phase. The software selected for IDN invention will be influenced by the narrative genre (e.g., video game, hypertext non-fiction, transmedia, etc.) and the selected IDN genre will also assist with determining which software may be applicable to the specific project. An online wiki for Interactive Storytelling and Narrative Theories provides a list of possible IDN authoring tools (IDSwiki, 2018). Some academic institutions have also developed different software not only for creation, but also for evaluation post-publication of digital narratives, such as IDtension46, Conducttr47, DART48, and VUE49. There are many software options, either open-source or subscription-based, that could be used to develop IDNs. Determining which software to select would also depend, in addition to the IDN genre, on several other factors including the complexity of narrative being developed, the capabilities of the software, and the project budget since some software offer enterprise (i.e., fee-based) subscriptions. Therefore, software selection will require individual project-based research to analyse the affordances and limitations of the possible solutions that can allow the communication goals of the specific IDN to be achieved. It could also be the case where existing software does not meet the invention requirements and bespoke solutions may need to be considered at this phase.

3.4.3 Phase 5: Arrangement

Arrangement in classical rhetoric would have involved the formal organisation of each part of a speech (Eyman, 2015, para 21). In printed novels, the arrangement would have been done by the author who may be influenced by an editor, but in IDNs there can be many creators, such as the writers, designers, programmers, editors, etc. involved in the arrangement. Arrangement in digital works can manifest in diverse forms (Eyman, 2015, chapter 2, para. 22) because, for instance, hyperlinked content in

46 IDtension was developed by Szilas in 2003.
47 Conducttr was developed in 2010 by Pratten and Ossinke (http://www.conducttr.com/).
48 Designers Augmented Reality Toolkit (DART) was developed by Georgia Tech (http://ael.gatech.edu/dart/).
49 Visual Understanding Environment (VUE) was developed by Tufts University (http://vue.tufts.edu/).
digital narratives does not necessarily have temporal, hierarchical relationships. In IDNs, the arrangement is predetermined by the creators and in part by the produser, which leads to new arrangements or emergent narratives with each process of produsage. Arrangement as a concept and process in narrative has been previously discussed by literary scholars. Hayman introduced the *arranger* as “a figure or a presence that can be identified neither with the author nor with his narrators, but that exercises an increasing degree of overt control over increasingly challenging materials” (as cited in Somer, 1994, p. 65). Thus, the arrangement is something separate to the authorship or narration. Barthes (1977) defines the *modern scriptor* as the role of combining or arranging pre-existing texts in new ways (i.e. remixing) and the role is “born simultaneously with the text” unlike the author of a book who “exists before it” (p. 145). The arrangement is based on the narrative content itself and in the context of emergent narratives, if an author tries to foresee an ending or outcome of the narrative, it constrains them to a narrow story path, which has a negative effect on the density of the story landscape (Louchart et al., 2008, p. 282).

To prevent the creation of a mostly linear narrative structure and a single ending, Louchart et al. (2008) propose *collaborative authoring* so that an individual author cannot predict or control the outcome and it creates a collaborative “letting go attitude towards authoring” (p. 282). Arrangement of an IDN system can be thought of as procedural authorship—writing the rules by which the texts appear, writing the texts, and determining the rules for what will happen in response to the participant’s actions (Murray, 1997, p. 152). The process of arrangement involves considering how the content will appear and what the narrative structure of the IDN protostories should be. Eyman (2015) refers to rhetorical arrangement as functioning “architecturally” (para. 23) and the term *information architecture* is commonly used in digital media practices, such as web design and in transmedia stories like *Star Wars* where George Lucas has been described as the “story architect” (Sánchez-Mesa et al., 2016, p. 11).

Applying the principle of arrangement to IDNs involves determining the system architecture and is a factor in preventing ludonarrative dissonance by balancing the procedures of interactivity with the narrative structure. Determining the level of desired user interactivity will help determine which narrative structure would be fitting an IDN.
Interactivity has been addressed by many scholars, but Ryan (2015) defined five common levels of interactivity that appear in digital narratives that can be used to aid future IDN creators with the narrative arrangement. Level 1 interactivity is low and does not affect the order of the discourse it presents (e.g., many printed novels); Level 2 interactivity has predetermined story content, but the order of the story is variable (e.g., choose-your-adventure novels); Level 3 interactivity has the user play a role as a member of the storyworld and progress along a fixed storyline controlled by the system (e.g., video games); and Level 4 “stories are not predetermined but generated on the fly out of data that comes in part from the system and in part from the user” (e.g., AI environments) (Ryan, 2015, p. 176-181). Ryan (2015) clarifies that in a Level 4 interactive narrative, “the systems must be authored [sic], and users should respond to affordances built into the virtual world and programmed into the system, rather than being entirely responsible for constructing the story” (p. 183). In other words, even with a high level of interactivity, it is important to maintain narrative cohesion through a structured system to avoid produsers experiencing ludonarrative dissonance. In Level 5, the “interactor is not using the system but, rather, modifying it for other users,” this meta-activity involves expanding the possibilities of action offered by the storyworld and would require permitting users access to the system so they can modify it or add to it (Ryan, 2015, p. 185). To help inform the level of interactivity to incorporate into an IDN, Ryan (2015) notes that digital culture favours narratives that promote “emergence and self-renewability” or replay value (p. 185), which is in part determined by the level of interactivity. Level 1 and 2 interactive narratives have little replay value; Level 3 offers some replay value; Level 4 offers a relatively high replay value because it provides opportunities for new content creation and alternate endings; and Level 5 has the highest replay value and allows produsers to shift roles into co-authors because they can modify and/or add to the narrative. The narrative communication goal(s) and level of desired user agency can inform which level of interaction should be provided. If there is a stronger need to communicate a narrative or message, or if a lower interactivity level should be provided. If the focus of an IDN is the experience or to communicate a theme (e.g., narrativity), then a higher level of interactivity should be provided.

Once the level of interactivity is determined, the rules for connecting or linking the different micronarratives and multimodal content needs to be determined through
procedural authorship of the narrative structure. IDNs can have many possible narrative structures. For example, Ryan (2015) identified nine possible narrative structures for interactive narratives: Complete Graph, Network, Tree, the Vector, Maze, Flowchart, Hidden Story, Braided Plot, and Action Space (as discussed in Chapter 2 – see Image 2). Each IDN, depending on the genre, would follow a different narrative structure and each individual IDN within these formats would also have a unique version of the modelled narrative structure. Thus, Ryan’s (2015) structures function as prototype structures that can be modified as per the specific requirements of individual IDNs. Structures that provide lower levels of interactivity and higher levels of narrative (i.e. authorial control) are the Tree structure (commonly used for websites), the Vector (commonly used in interactive fiction), and the Maze structure (commonly used in video games). Structures that provide moderate levels of interactivity and moderate levels of narrative cohesion are the Flowchart (used in printed narratives and video games), Braided Plot (used in printed narratives and cross-media), and Action Space (used in massive multiplayer online role-playing games). Structures that provide a high level of interactivity and a lower level of narrative cohesion are Hidden Story (commonly used in alternate reality games), the Network (used for narratives with multiple perspectives for example), and Complete Graph (not commonly used to create narratives). In sum, the narrative structure should be selected to provide the right balance of the desired level of user interactivity. If the structure and interactivity work at odds (i.e., narrative paradox), ludonarrative dissonance can occur, so finding the correct arrangement for the provided interactivity is pertinent to IDN system creation.

3.4.4 Phase 6: Design

In classical rhetoric, the canon of style in speeches would involve grammatical correctness, clarity (e.g., avoiding jargon) and or drawing upon poetic devices (Eyman, 2015, para 28). In digital rhetoric, the style canon moves away from language and focuses on design, including options like colour, font choice, layout, interactivity, appropriate use of media, and usability (Eyman, 2015, chapter 2, para. 29). Design in the digital medium manifests in the user interface. The interface design impacts how long a user will spend engaging with an IDN and it contributes to their level of immersion. If an interface is difficult to navigate, has slow load speeds, or is confusing, a user is likely to leave quicker than if the experience is intuitive, pleasant, and
immersive. Manovich (2001) argues that historically artists made a work within a single medium, so the interface and the work were one and the same but in new media, they are separate, which results in the possibility of creating multiple interfaces for the same material accessed from a database of multimodal material (p. 227). Manovich (2001) uses the term database to refer to the encyclopaedic affordance of the digital medium and explains that “the ‘user’ of a narrative is traversing a database, following links between its records as established by a database’s creator. An interactive narrative […] can then be understood as the sum of multiple trajectories through a database” (p. 227). For example, HCI designers often remediate conventions of the “human-made physical environment, beginning with Macintosh’s use of the desktop metaphor. And more than any medium before it, HCI is like a chameleon that keeps changing its appearance, responding to how computers are used in any given period” (Manovich, 2001, p. 89). In the 1990s, cultural interfaces aimed to provide user control and an immersive experience with cultural objects, such as books and movies (Manovich, 2001). More recently, the aim of VR is to blend virtual and physical spaces through de-emphasising the rectangular screen frame and allowing the user to freely move around the physical space (Manovich, 2001, p. 90-112). Therefore, key considerations for interface design are the encyclopaedic and spatial affordances of the digital medium.

The design needs to clearly identify how to navigate through the content, show which options users have for interaction, and how to select those options (e.g., clicking a text-based hyperlink, an icon or image, etc.). Manovich (2001) explains that the computer interface acts as a code that carries cultural messages in a variety of media. When you use the Internet, everything you access—texts, music, video, navigable spaces—passes through the interface of the browser and then, in turn, the interface of the OS [operating system] (p. 64).

Many IDN genres have a single digital interface (e.g., interactive fiction, interactive cinema), but some, such as video games often have more than one interface. For example, a video game may have one interface for the regular gameplay mode, another to display menu-based information, such as the current level, statistics, and perhaps a third that shows a map of the whole game world. Therefore, depending on the IDN genre being created, the interface design choices need to be intuitive for the user and
could be used to create more meaning depending on how the multimodal content is delivered. Another design consideration is visual branding, which is particularly important for non-fiction narratives that may be trying to persuade produsers to visit a website, participate in another media, or take another specific further action. Visual brand identity through corporate/organisational logos and colour choices can impact produsers understanding of the narrative and how it fits into a wider transmedia narrative context when applicable.

Like invention, IDN design is also artistic and subjective; it may involve specialised skillsets and knowledge, such as design thinking, colour theory, and UX design. Depending on the selected IDN genre being developed, there are many different existing design paradigms that creative teams could draw from. This could involve working with a specialist in UX design for web-based products, video game animator(s), or other developers with advanced skillsets. For example, there are over 5,000 books published on video game design, 30 on interactive narrative design, and 74 on video game narrative, but only a few address the practicalities of design (Roth & Koenitz, 2017, p. 20). Designers can draw from a variety of existing techniques and practical guidelines for interaction design from creating flowcharts, storyboards, determining stylistic unity for better user experiences (Meadows, 2002; Krippendorff, 2006; Bateman, 2007; Hartson & Pyka, 2018; Skolnick, 2014; Heussner et al., 2015).

The implementation of HCI and cognitive design techniques for each IDN project will differ depending on the narrative communication goals, genre selected, team members involved and the project budget. Therefore, there is not one prescriptive method for the finer details of interactive narrative design that applies to all genres because it is an artistic practice. In the design phase, the interface and aesthetic choices need to be carefully considered and strategically implemented since design immensely impacts the users’ reception of the IDN.

3.4.5 Phase 7: Updates

In classical rhetoric, the canon of memory referred to the orator’s ability to memorise the speech and rhetorical arguments (Eyman, 2015, chapter 2, para 32). In more recent scholarship, this principle has largely been overlooked because print and digital media technologies diminished the need for memorisation. Keeping with the original meaning of the principle, Eyman (2015) argues that the memory in the digital medium refers to digital literacies of knowing how to store, retrieve, and manipulate
information. On a socio-cultural level, the Internet also presents new challenges for creators who need their work to be memorable, updatable, and relevant in today’s rapidly changing digital culture, which demands real-time delivery of information. Instead of developing a single communication and delivering it into the world in a one-to-many linear manner, a digital work has the potential to be a work in progress. Unlike in other media, which largely remain the same after production (with exceptions such as new editions of printed books or “reboots” of films), there is a cultural expectation that content on the Internet will always be up to date. A website that is outdated in terms of content or design causes visitors to lack trust in the narrative (Alsudani & Casey, 2009; Flanagin & Metzger, 2007; Robins, Holmes, & Stansbury, 2010). In the context of IDN, not only is information stored, retrieved and manipulated, but the narrative can theoretically be revised or updated based on produser interaction and feedback. IDN creators need to consider the audience’s reception to determine if the IDN needs to be updated (i.e., an edited or expanded argument), needs to be re-released (i.e., counterargument) or if a subsequent or spin-off narrative is possible (i.e., further argument). There are opportunities to create stronger rhetoric through revision, remixing, or further responding to the audience’s reaction and interaction with the text. In addition to the content creators making revisions, IDNs could continually be expanded through user-generated content, or if permitted, a level 5 interactivity which would allow narrative consumers to edit the original IDN. Today’s remix culture often inspires and results in the development of new iterations, spin-offs, and paratexts of critical commentary that contribute to the overall rhetoric communicated by the IDN produced. In sum, the memory principle of rhetoric being reframed as updates refers to a variety of minor improvements to ensure the narrative remains memorable with the audience, that the content may be ephemeral and allow for the flexibility of time-dependent delivery, and storage updates in terms of RAM memory or other software requirements that would impact the overall lasting rhetoric.

3.5 Applying the Non-fiction IDN Theoretical Framework to Practice-based Research

The above seven-phase theoretical framework for creating non-fiction IDNs was expanded in terms of the system, process, and product, and was based in a rhetorical approach to the creation and evaluation. It aims to be applicable to any non-
fiction IDN development project in the creative industries and to enable future comparative scholarly research. The applicability of this expanded framework will be tested, demonstrated and reflected upon through a case study of practice-based research. Practice-based research involves producing a creative artefact as the basis of the contribution to knowledge and the outcomes are accompanied by a critical discussion of the significance and context of the claims (Skains, 2018, para 11). The creative artefact produced in practice-based research (the IDN prototype in this case) is effectively an experiment designed to answer a research question about the art and practice that could not be explored by other methods (Skains, 2018, para. 12). This practice-based research is applied to cultural heritage tourism and the selected case study, as introduced in Chapter 1, of the 11 UNESCO World Heritage Australian Convict Sites, henceforth referred to in this thesis as the Australian Convict Sites for simplicity.

3.5.1 Case Study Objectives Revisited

The results of this case study will exemplify how the seven-phase theoretical framework, which addresses the primary research question, can be applied and inform the future practice of IDN development for non-fiction applications. The case study has the following objectives (as stated in Chapter 1):

(1) understand and appeal to the interests of cultural heritage tourists,
(2) identify gaps/differences between existing narratives about the Australian Convict Sites produced by the tourism industry, experts, and users as per hypothesis #2
(3) use the results of data analyses to create an IDN prototype, and
(4) test the prototype with produsers to evaluate which content modalities were preferred, how the narrative structure impacted their experience, whether the desired level of agency was achieved, and if the user was inspired to take further action.

To achieve these objectives, the creative practice of creating a new IDN on the Australian Convict Sites involved three data-gathering experiments and a critical discussion of the overall outcomes. The user modelling, content modelling, and user testing were organised into three different chapters in order to show how the applied methods and associated results corresponded to each of the seven phases of the theoretical framework (see Table 4). Continuing with a bottom-up approach, Chapter
4 considers the IDN process, Chapter 5 details a newly proposed method for inventing a remixed transmedia narrative IDN system for the cultural heritage genre, and Chapter 6 details the remaining rhetorical decisions made in regard to the IDN system design and the results of user testing on the IDN product.

Table 4. Chapter Structure for Creative Practice According to IDN Theory

<table>
<thead>
<tr>
<th>Chapter #</th>
<th>Theoretical IDN Framework Phases Addressed</th>
<th>Associated IDN components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 4</td>
<td>Phase 1: Know your Audience (methods &amp; results)</td>
<td>IDN Process</td>
</tr>
<tr>
<td></td>
<td>Phase 2: Define Communication Goals/measures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phase 3: Consider the Delivery Method</td>
<td></td>
</tr>
<tr>
<td>Chapter 5</td>
<td>Phase 4: Invention (methods &amp; results)</td>
<td>IDN System</td>
</tr>
<tr>
<td>Chapter 6</td>
<td>Phase 5: Arrangement</td>
<td>IDN System &amp; Product</td>
</tr>
<tr>
<td></td>
<td>Phase 6: Design</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phase 7: Updates (User testing methods, results &amp; discussion)</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 4: Modelling the IDN Produsers

A particular challenge with creating a prototype IDN is personalising the produsers’ experiences so that the emergent narratives are tailored to individuals’ needs and interests. As discussed in Chapter 3, Lawless et al.’s (2016) best practices designing personalised systems were applied to the IDN prototype for the Australian Convict Sites. The best practices are to model users, model content, and then create an adaptive system (Lawless et al., 2016, p. 175-179); and this chapter is concerned with modelling the IDN produsers, which covers Phases 1-3 of the theoretical creation framework. Phase 1 describes the data analysis method used for user modelling, Phase 2 defines the project measures for the later evaluation stage, and Phase 3 outlines the rationale for the selected IDN genre as informed by the literature review covered in Chapter 2. The results of the data analysed in Phase 1 informed the user model of cultural heritage tourists visiting Australian Convict Sites, contributed to the rhetorical communication goals for the IDN, and the selection if interactive documentary (iDoc) as the genre for the IDN prototype developed for this case study. It is noted that the user model could be useful for the Australian tourism industry and associated cultural heritage institutions who may target this group with future communications. The outcomes of Phases 1-3 also contributed to narrative choices made in the following phases of the theoretical creation framework (as discussed in Chapter 5 and 6).

4.1 Phase 1 Method: Getting to Know Cultural Heritage Tourists

The prospective audience for an IDN on the Australian Convict Sites is very broad, but in order to create a focused and purposeful product, the potential targeted audiences were divided into three main groups. For example, the IDN could be of interest to tourists, GLAMs and researchers, and teachers and students. The target audience for the IDN prototype is cultural heritage tourists because, as discussed in Chapter 1, there is an increased amount of cross-media tourism content that can be taxing for this sub-community of tourists. The primary audience being cultural heritage tourists also aims to narrativize the existing and fragmented tourism literature into a
macro-narrative about the Australian Convict Sites. It is acknowledged that a secondary audience may be those who work in cultural heritage and memory institutions, which may include historians, museum curators, non-profit heritage organisations, librarians, academics and other subject-matter experts. Finally, a tertiary audience is educators and students who may view the IDN as a supplementary learning tool to traditional resources used for teaching and learning about Australian convict history. The secondary and tertiary audiences – subject-matter experts and educators respectively – were not investigated for the purpose of user modelling but were considered later during the invention process (Phase 4—see Chapter 5) because the resources used were drawn from publications written by experts and educators. The secondary and tertiary audiences also participated in the IDN evaluation to gather feedback on the IDN prototype (Phase 6—see Chapter 6).

In order to develop an IDN that suits the interests and needs of cultural heritage tourists as the primary audience, a better understanding of who makes up this group is needed. To anticipate the audience’s reception, Rosenblatt (1969) suggests paying more attention to the audience’s background in terms of their language, life experience, and cognitive habits because they bring this to their interpretation of texts (p. 45-46). Secondly, she also asks “[what] is the function of the reader’s purpose in the reading transaction?” (Rosenblatt, 1969, p. 46). In other words, why are the produsers interacting with the IDN system and what do they want to get from the experience? These questions support the need to investigate and gather information about potential produsers before an IDN is created because their interests may not align with the creator’s rhetorical purpose(s). To better understand the interests and needs of cultural heritage tourists, both qualitative and quantitative data were gathered from previous studies on cultural heritage tourists (i.e., qualitative), visitor statistics from Australian Governmental bodies, and TripAdvisor statistics from web pages dedicated to the UNESCO Australian Convict WHS (see Chapter 2).

4.1.1 Previous Studies Defining Cultural Heritage Tourists

As tourism has continued to grow rapidly in recent decades, the industry has sub-divided tourists into different groups or communities to more precisely target

---

50 Furthermore, the secondary and tertiary audiences often have easier access to other resources, such as libraries, museum archives, and educational materials than tourists or members of the public who may not know where to start/look for content resources.
communications, marketing materials, and visitor experiences to their specific interests. Defining these sub-communities will be helpful for the tourism industry and GLAMs, which are designing increasingly complex digital visitor experiences. Heritage is “what we inherit from the past and use in the present day” and cultural heritage includes both tangible (e.g., buildings, landscapes, artefacts) and intangible (music, beliefs, ceremonies and folklore) elements, which are used for tourism and other purposes (Timothy, 2011, p. 3). There is no universal definition of cultural heritage tourism and McKercher and Du Cros (2002) explain that cultural tourism is an umbrella term that can include many activities related to history, the arts, and museums. The UNWTO (2018) define cultural tourism as an activity where

the visitor’s essential motivation is to learn, discover, experience and consume the tangible and intangible cultural attractions/products in a tourism destination. These attractions/products are related to a society that encompasses arts and architecture, historical and cultural heritage, culinary heritage, literature, music, creative industries and the living cultures with their lifestyles, value systems, beliefs and traditions (p. 18).

This definition of cultural tourism specifically encompasses heritage as well as present-day cultural practices, which Timothy (2011) also includes in his similar definition of cultural heritage tourism (p. 6)—as quoted in Chapter 1 of this thesis. The concept of cultural heritage tourism refers not only to the sites the tourists visit, but also why they travel to them. Cultural tourists are motivated to go “to cultural attractions away from their normal place of residence, with the intention to gather new information and experiences to satisfy their cultural needs” (Richards, 1996, p. 24). These broad definitions communicate a desire for knowledge and to experience locations of history and culture, but reviewing previous studies on cultural heritage tourists can help identify who is part of this community, what their interests are, and it can contribute to the user model of the target audience for the IDN prototype.

To date, many scholars have discussed tourists’ demographics, motivations for travel, and their cultural experiences (Frank & Medaric, 2018). For example, earlier studies from the 1990s showed that heritage sites attract both domestic and international visitors, but the majority are domestic due to their identification with their history and culture. Heritage tourists have been divided into different groups, such as educated visitors, professionals, families or groups, school children, and nostalgia-
seekers (Nuryanti, 1996, p. 253). Since then many scholars (Chang, 2006; Nyaupane et al., 2006; Poria et al., 2004) have argued that motivational variables are more important than demographics when segmenting culturally motivated tourists (as cited in Ramires et al., 2018, p. 50). A key shift in focus to tourists’ interests was initiated by McKercher (2002) who suggested that there are different types of cultural tourists who can be segmented for more specific program development and marketing purposes (p. 271). McKercher’s (2002) five segments of cultural tourists, based on motives of travel and the depth of experience, are purposeful, sightseeing, casual, incidental, and serendipitous tourists (McKercher, 2002, p. 32-33). Employing this typology in a later study, McKercher and Du Cros (2003) found that most cultural tourists were casual or incidental, indicating that cultural motives played little role in their decision to visit (p. 48). The main factors influencing cultural tourists’ decision-making are physical distance, cultural distance, travel motivations and activity preferences, which shape the experience sought and the amount of learning from participation in cultural activities (McKercher & Du Cros, 2003, p. 57). Consequently, the purpose or motivation for travel can inform how much entertainment or educational content different tourists may desire in an IDN. In terms of behaviour, McKercher & Du Cros (2003) found that most cultural tourists participate for recreation and pleasure rather than for deep learning experiences (McKercher & Du Cros, 2003, p. 56). Based on these findings, McKercher and Du Cros (2003) recommend that cultural tourism content must be presented in an easily consumable and enjoyable manner that may contain elements of learning, but it should firstly entertain (p. 57). Thus, more casual cultural heritage tourists have less motivation for learning and cultural understanding and can be considered as “consumers of experiential insight” rather than “learners of scholarly fact” (McIntosh, 1999, p. 51). As the IDN prototype is focused on UNESCO WHSs, studies of tourists who have visited these sites provide further and more specific information about the potential IDN audience.

World heritage sites (WHSs) attract a range of tourists from international and domestic to cultural and general. However, for most foreign tourists, WHSs “are likely to be only a small part of a more extensive itinerary” (Timothy, 1997, p. 752). Visits to WHSs allow people to appreciate universal civilisation and the continuity and stability of modern society while viewing old structures (Timothy, 1997). What is viewed as world heritage to one visitor may be considered personal to another
(Timothy, 1997, p. 752). Timothy (1997) further explains that there are five levels of heritage tourism experience – personal, local, national, world, and shared – which involve varying degrees of personal attachment to a site (p. 752). These levels of the heritage tourism experience describe variations in how visitors may make meaning and intrinsically relate to the site. For the purposes of targeting cultural heritage tourists who may want to visit WHSs, it is important to identify the particular characteristics of WHS tourists and distinguish them from heritage tourists more generally (Ramires et al., 2018, p. 50). For example, some WHS visitors consider the sites a “collectable set” (Buckley, 2002). King and Prideaux’s (2010) study showed that 10% of WHS visitors are “site collectors” arguing the point that these visitors may have different motivations and interests in visiting than other cultural heritage tourists. The few prior studies on tourists to UNESCO WHS examined tourists visiting WHS located in Europe, USA, Africa and Australia and these studies have helped identify some of the qualities that distinguish this subset of cultural heritage tourists.

Europe has the highest number of UNESCO WHS compared to any other continent and three previous studies on cultural heritage tourists cover European sites (Ramires et al., 2018; Lupu, Brochado, & Stoleriu, 2018; Adie & Hall, 2017). Firstly, Ramires et al. (2018) surveyed visitors to Porto, Portugal, and asked them questions about their socio-demographic profile, travel motivations, behaviour, and assessment of the destination (p. 52). They found that most tourists were from the nearby countries (Spain, UK and France), the average age of visitors was 38 years old, and 84% were motivated to visit Porto for holidays and leisure, 50% for culture and heritage, 19% for visiting friends and relatives, and 8% for business (Ramires et al., 2018, p. 53). The tourists were segmented into absorptive cultural tourists (51%) who averaged 37 years of age, were employed, had higher education degrees, were repeat visitors and placed high importance on gastronomy and value for money; conventional cultural tourists (29%) who were on average over 40 years of age and value culture and leisure; and spontaneous cultural tourists (20%) who were younger (26-35 years) and gave the lowest importance to culture (p. 56-57). Ramires et al.’s (2018) study confirms McKercher’s (2002) five segments of cultural tourists and shows that absorptive cultural tourists – the primary target audience of the IDN prototype – are in their 30’s, well-educated, and interested in dining. It is important to note, however, that none of the tourists surveyed in Ramires et al.’s (2018b) study were domestic tourists.
Another Europe-based WHS study by Lupu et al. (2018) analysed TripAdvisor reviews on visitors’ experience at the UNESCO monasteries in Northeast Romania, which provided more thematic information about the visitors’ behaviours and interests. In terms of visitor behaviour, Lupu et al. (2018) found that the majority of visitors were couples (42%) and families (29%) and came from European countries (68%) including the UK, Romania, Belgium and Russia. A content analysis of TripAdvisor reviews revealed 10 main themes that led to a better understanding the visitors’ interests and experiences and highlighted that both religious and non-religious themes (e.g., paintings, architecture, history) were important to heritage visitors (Lupu et al., 2018, p. 12). They noted that “visitors to these sites can explore their national or personal identity, whilst, at the same place and time, enjoy the sites’ architecture, history or natural environment” (Lupu et al., 2018, p. 3). This reflects Timothy’s (1997) argument that visitors may have different levels of experience at cultural heritage sites. By gathering both demographics and reported visitor experiences, Lupu et al.’s (2018) study provides a useful methodology for investigating WHS tourists at specific sites. However, in contrast to previous scholars (Timothy & Nyaupane, 2009; Nuryanti, 1996) who distinguish between international and domestic cultural heritage tourists, Lupu et al. (2018) did not separate domestic visitors (Romanians) from international visitors, so it is unclear how many of the 67% of European visitors to the sites were domestic. Lupu et al.’s (2018) study also showed, similar to Ramieres et al.’s (2018) findings, that physical and cultural distance factor into visitor demographics at WHS.

Including but also expanding beyond Europe, Adie and Hall’s (2017) study surveyed visitors at three UNESCO WHS in three different continents: Studenica Monastery, Serbia; Independence Hall, USA; and the archaeological site of Volubilis in Morocco. Adie and Hall (2017) found that most visitors travelled in groups from two to five people and in bus tour groups of more than 10 people, they were well educated with at least a university degree (similar to Ramieres et al.’s (2018) findings), but found no trends in terms of age and gender as they were rather evenly distributed (p. 77-78). This suggests that cultural heritage tourists visiting UNESCO WHSs across the world are more diverse than the average heritage tourist, who tend to be middle class and middle-aged (Adie & Hall, 2017, p. 78). Adie and Hall (2017) found that most visitors to each site were domestic from other parts of the country rather than
local to the surrounding area since 74% of visitors to Independence Hall were American and 59% to Studenica Monastery were Serbian. However, only 13% of visitors to Volubilis were Moroccan; Adie and Hall (2017) suggest that this may be due to modern Moroccan identity being strongly based on Islamic history and Volubilis pre-dates this. They also found that many visitors to the Studenica Monastery had lower incomes and hypothesised that their motivation to visit may not be for heritage tourism, but religious reasons (Adie & Hall, 2017). Therefore, this study of three very different WHS shows that the site’s context (political, religious, historical) may have an impact on the types of visitors received. It also shows that WHS visitors may have a range of demographics based on the site’s socio-cultural context.

Lastly, looking at research based in Australia, King and Prideaux (2010) surveyed visitors to five natural UNESCO WHSs to determine brand awareness and whether or not they were WHS collectors. King and Prideaux’s (2010) results showed that 40% of visitors did not know they were visiting a world heritage area before or after their visit (p. 244). King and Prideaux (2010) argue that WHS signage placement in low-traffic areas may be a contributing factor to this unawareness. On average, 10% of visitors to the five natural UNESCO sites identified themselves as WHS collectors (King & Prideaux, 2010, p. 243). One of the WHSs in particular, Riversleigh D, had a higher proportion of visitors (82%) who knew it was world-heritage designated and fewer (8%) self-identified as a WHS collector. This study indicates that UNESCO WHS status is likely not a primary influencing factor for most visitors. Furthermore, the researchers state that people who have visited a WHS before and inexperienced domestic travellers are more likely to visit a WHS (King & Prideaux, 2010, p. 244). Overall, King and Prideaux (2010) argue that more could be done to build UNESCO WHS brand awareness and educate visitors because it should signal that the site is a “must-see” for visitors, cue the public on acceptable behaviours and expectations while on-site, and act as a visible symbol of national commitment to quality recreational opportunities and site protection and conservation values (p. 245). If WHS visitors do not recognise the UNESCO brand and these associated meanings, it could pose risks for site protection and conservation.

51 The reasons for visiting were not collected by the researchers and could be investigated by future research on visitors to natural UNESCO WHS.
The above studies on visitors to UNESCO WHS show that each site attracts different visitors for different reasons. It is difficult to cross-compare visitors to different sites that are recognised for their political, religious, historical or natural values because they may have different motivations for visiting. WHSs may attract absorptive, conventional and spontaneous cultural tourists who may have different kinds of on-site experiences – personal, local, national, global, shared – as described by Timothy (1997). For example, those visiting the Serbian and Romanian monasteries may have had personal religious motivations (Adie & Hall, 2017) and those visiting Riversleigh D seemed to be more well-informed of the site’s natural heritage significance and motivated enough to travel three-days to get there (King & Prideaux, 2010). These studies also show that WHS visitors tend to overlap in some demographic respects with cultural heritage tourists in terms of their generally higher economic status and level of education, they travel in groups rather than alone, many are domestic travellers, and international visitors tend to be from neighbouring countries. However, this analysis provides only a general outline for a user model of potential UNESCO WHS visitors for the IDN prototype and in order to identify the specific interests and needs of the potential audience, another method of analysis was required.

4.1.2 Cultural Heritage Tourists to the Australian Convict Sites

To gather further information on the interests of visitors to the Australian Convict Sites, three sources of data were collected, analysed, and cross-compared. A survey with a selected sample of on-site tourists was not performed because many people may not self-identify as a cultural heritage tourist nor accurately self-report their primary motivations for travel to a cultural heritage site, especially if they are motivated by a multitude of reasons (e.g., a certain number of allocated days off work, low-cost flights, recommendations from friends, etc.). Espelt and Benito (2006) confirm that discrepancies between expressed opinion versus real opinion and the lack of detail in people's open-ended responses in questionnaires or surveys are issues (p. 443). Thus, to gain insight into cultural heritage tourists as the primary audience for the IDN prototype, the three main data sources collected and analysed were: (1)

---

52 A survey of tourists to the Australian Convict Sites was not used as a data collection method because it would be difficult to target and confirm survey-takers as cultural heritage tourists. An on-site survey may not provide additional information on the potential user groups than what is already identifiable from existing studies, statistics, and surveys of cultural heritage tourists. Furthermore, while the IDN focuses on the 11 UNESCO World Heritage Australian Convict Sites, the narrative may develop beyond these locations as sources of content in the future.
national tourism statistics as reported by the Australian Government; (2) visitor statistics for the Australian Convict WHS in public reports (as available); and (3) visitor statistics for the Australian Convict WHS from UGC on TripAdvisor.

To date, previous research on cultural heritage tourists has not been comparative to highlight the differences between a selected general tourism population and cultural heritage tourists. Therefore, the national tourism statistics were gathered to provide a baseline view of general tourists to the different regions of Australia and to enable comparison and differentiation with the visitors to the Australian Convict Sites. The publicly available reports published by the WHS management authorities included estimated numbers of visitors to the convict sites. TripAdvisor reviews were selected as a source of visitor information because it is one of the largest travel review websites with 661 million reviews and an average of 456 million unique monthly visitors (About TripAdvisor, 2018). TripAdvisor provides a convenience sample of visitors to the sites and the reviews are user-generated rather than directed by academic questioning, which can result in less accurate reporting on behalf of participants (Espelt & Benito, 2006). Finally, Lupu et al.’s (2018) study showed that TripAdvisor reviews are a fruitful source for identifying visitors’ thematic interests in WHS.

4.2.1 Data samples and collection method

The data from these three selected sources were collected in October 2018 to provide a specific timeframe in which to cross-compare the data. The tourism statistics reported by the Australian Government were gathered from the most recent available reports from the Australian Government, New South Wales (NSW) Government, Government of Western Australia (WA), Tourism Tasmania (the Tasmanian Government’s tourism marketing agency), and the Department of Regional Australia for Norfolk Island. Visitor statistics to the WHS were collected from the management authorities and other publicly available reports for Port Arthur Historic Site, Cockatoo Island, Hyde Park Barracks Museum, Fremantle Prison, and Cascades Female Factory. At the time of data collection, TripAdvisor web pages were available for eight of the 11 WHS including Port Arthur Historic Site, Fremantle Prison, Cascades Female Factory Historic Site, Coal Mines Historic Site, Cockatoo Island, Hyde Park Barracks

53 A convenience sample (a term often used in psychology and other social science studies) is defined as “selecting a sample of individuals or cases that is neither random nor systematic but rather is governed by chance or ready availability. Interviewing the first 50 people to exit a store is an example of convenience sampling” (APA Dictionary, 2020).
Museum, Norfolk Bay Convict Station, and Old Government House Parramatta. The Chrome extension “Data Scraper” (Data Miner, 2018) was used to extract the required data variables from TripAdvisor’s HTML web pages into Excel spreadsheets. The data variables collected for each WHS’s TripAdvisor web page included: the number of reviews, the location where each reviewer lives (e.g., city and country), type of traveller (e.g., couples, families, friends, solo, business), the date, title, the textual content of the review, and hyperlinks to images attached to the reviews.

4.2 Phase 1 Results: The Prospective IDN Audience

The following results of this cross-comparison are organised into similar categories of information that have been gathered in previous studies on cultural heritage tourists including the total number of visitors to the WHS, the country of origin of the visitors, and the type of visitor (e.g., couples, families, friends, solo, business).

4.2.1 Total Number of Visitors

To get a baseline indicator of the scale of Australian tourism, the statistics from March 2018 showed a total of 102.4 million overnight domestic visitors and 8.3 million international visitors in the previous year (Tourism Research Australia, 2018). Looking specifically at the distribution of visitors to NSW and Tasmania – states with nine of the 11 Convict Sites – tourism numbers increased overall by 16% and 20% respectively and these two regions saw the greatest increase in tourism from March 2017 to March 2018 (Tourism Research Australia, 2018). This shows that general tourists already visiting these regions could possibly be persuaded through an IDN to visit the Australian Convict Sites. The regional statistics revealed that NSW, Western Australia and Tasmania received over 22 million domestic visitors and 4.8 million international visitors combined. Australians are active domestic travellers, making up 82% of total visitors to the regions containing the WHS, and there are fewer international travellers (18%), which indicates a large potential domestic audience for an IDN on the Australia Convict Sites and correlates with previous research on cultural heritage tourists mostly being domestic visitors.

The annual tourism statistics for Sydney (NSW Government, 2018), Perth (Tourism WA, 2018) and Tasmania (Tourism Tasmania, 2018) show that Sydney gets
the largest number of visitors, followed by Perth and Tasmania (see Figure 18). The latest available tourism statistics for Norfolk Island (Department of Regional Australia, 2012) were from 2010-2011 and showed a total of 24,268, domestic and international visitors combined, demonstrating a potential to increase tourism to the Kingston and Arthur’s Vale Historic Area (KAVHA) through a persuasive IDN.

**Figure 18. Tourism Statistics for 2018 in Australian Regions with Convict WHS**

![Tourism Statistics Chart](chart.png)

To determine whether a proportional number of tourists visited the Australian Convict Sites as to the regions in which they are located, the visitor statistics were gathered from publicly-available\(^5\) management reports for Port Arthur Historic Site (Port Arthur Historic Site Management Authority, 2017, p. 22), Cockatoo Island (Harbour Trust Annual Report, 2016-2017, p. 38), Hyde Park Barracks Museum (Sydney Living Museums Annual Report, 2016-2017, p. 38), Fremantle Prison (Premier’s Awards, 2012), and the Cascades Female Factory (Port Arthur Historic Site Management Authority, 2017, p. 34) (see Figure 19). These results showed similar statistics of more visitors to Sydney, followed by Perth and then Tasmania.

\(^5\) Officially-reported statistics for the number of visitors to the other convict sites were not published at the time this research was conducted (in October 2018).
At the time of data collection, eight of the eleven Australian Convict Sites had a TripAdvisor page and there was a total of 11,295 reviews (see Figure 20). Based on the number of reviews posted, the most popular convict sites for travellers are the Port Arthur Historic Site (Hobart, Tasmania) and the Fremantle Prison (Perth, Australia). While Cockatoo Island was reported to be the second most-visited site after Port Arthur according to the public reports, the statistic for Fremantle Prison of 170,000 visitors per year was from 2012 so it can be assumed, based on tourism statistics in Western Australia (Tourism WA, 2018, p. 4), that the number of visitors to Fremantle Prison would be higher than those quoted in 2012.

As of October 17, 2018, when the data were gathered.
Therefore, cross comparing the results from the public reports and TripAdvisor, it is clear from visitor numbers that the most popular of the 11 Australian Convict Sites are Port Arthur Historic Site, Cascades Female Factory, Fremantle Prison, Cockatoo Island, and Hyde Park Barracks. Although Sydney receives the highest number of tourists annually, the WHS show that Tasmania receives the most visitors followed by Sydney and Perth. Thus, WHS visitors are not proportional to the general tourist population.

4.2.2 Visitor Origin

The tourism statistics show that the top five countries of origin for international visitors are China, New Zealand, the USA, the UK, Singapore, and Malaysia (see Figure 21). These three English-speaking countries have a historical connection to convict transportation to Australia and account for 29% of international visitors and the countries in Asia are close in distance to Australia.

Figure 21. Country of Origin of Visitors to Sydney (NSW Government, 2018), Tasmania (Tourism Tasmania, 2018) and Western Australia (Tourism WA, 2018)

Over 90% of TripAdvisor reviewers included their location information (10,181 of 11,295 reviews). Similar to the national tourism statistics, these data show a higher number of domestic (Australian) visitors (60%) compared to international visitors (40%), and the top nations for international travellers who wrote reviews were from the USA, UK, and New Zealand (see Figure 22). Reviews with the country of origin

---

56 It is noted that the stated location on TripAdvisor may be the reviewer’s nationality or their current location of residence.
origin listed as China accounted for only 0.8% of reviews, which could be for a variety of reasons, such as visitors from China may be less interested in the WHSs, or that they have a preference for using Baidu Travel Forum and online tour operators, such as Ctrip, Qunar and eLong (Kizmaz, 2018) over TripAdvisor. The high number of international visitors to the Australian Convict Sites (40%) compared to the 28% of overall international visitors to Australia shows that there is significant world interest in the sites. The USA and New Zealand are closer to Australia than many European countries in terms of distance and culture. The UK made up a large portion of visitors which could be due to the ancestral and colonial connections (language, culture and family) to Australia and availability of direct flights from London (convenience of travel).

Figure 22. Top 5 TripAdvisor Reviewers’ Listed Countries of Origin (as of Oct. 17, 2018)

Of the TripAdvisor reviewers who included country of origin, 52% (5,268 of 10,181) included a city name. Domestic travellers to the Australian Convict Sites were from the most populous cities in the country (see Figure 23). Sydney (population 5.1 million) and Perth (2 million) both contain Convict Sites, but Melbourne (4.85 million) is the second most populated city in Australia, and Brisbane (2.4 million) has a slighter larger population than Perth (Media Release, 24 April 2018). It can, therefore, be inferred that people living in Melbourne and Brisbane have an interest in travelling to the Convict Sites.
4.2.3 Type of Visitor

Comparing the general tourism statistics to the UNESCO WHS data revealed a difference between the two types of tourist groups. The Australian national tourism statistics for Sydney (NSW Government, 2018) and Perth (Tourism WA, 2018) showed that more than 40% of travellers to both cities travelled alone (see Figure 24). Previous studies (Lupu et al., 2018; Adie & Hall, 2017) showed that most cultural heritage tourists travel in couples or groups rather than alone. Approximately 85% of TripAdvisor reviewers (9,607 out of 11,295) identified what type of traveller they were and the majority of these reviewers (47%) travelled in couples (see Figure 24). The TripAdvisor data correlates with Lupu et al.’s (2018) study, confirming that visitors to UNESCO WHS are often couples; thus, they seem to travel in pairs and groups rather than alone.

---

57 Information about the type of traveller was not reported for Tasmania or Norfolk Island.
Some overall conclusions that can be drawn from this comparison of existing research on cultural heritage tourists and the analysis of visitors to the Australian Convict Sites show that the majority of visitors (60%) are domestic and international visitors tend to come from countries that are close in distance and culture (i.e., USA, New Zealand, and UK). Although Sydney receives the most tourists annually, the WHSs located in Tasmania (Port Arthur and Cascades Female Factory) and Perth (Fremantle Prison) receive comparatively more visitors than the WHS located in Sydney (e.g., Hyde Park and Cockatoo Island). This indicates that the sites in Tasmania and Perth are more popular which could be due to a number of factors, such as tourism marketing strategies, the larger size of the penal settlement (as a tourist attraction), and the amount of tourism infrastructure available on-site. It also highlights that the other WHSs including Darlington Probation Station (Maria Island), Brickendon and Woolmers Estate, and the Old Great North Road in particular (evidenced by the lack of a TripAdvisor page) may benefit from increased tourism marketing pertaining to the convict history through a persuasive IDN, especially if these sites can attract “UNESCO WHS collectors.” Many visitors to the Australian Convict WHSs travelled in couples, which can inform content development strategies as it can be tailored more towards adult audiences than families, for example.

These quantitative demographics help model the profile of potential visitors to the Australian Convict Sites, but do not provide the depth that qualitative information
can inform what interests visitors about the sites. As many scholars have argued (McKercher & Du Cros, 2003; Espelt & Benito, 2006; Ramires et al., 2018), cultural heritage tourism segmentation is more effective when it is based on desired motivation/interest and experience in a place; thus a qualitative analysis of the content of the written TripAdvisor reviews was also conducted to reveal common topics or themes that interested visitors (as is discussed in Chapter 5 – Phase 4). The advantage in analysing voluntary TripAdvisor reviews is that the reviewers’ interests are not directed by a narrowed list of questionnaire options, and they can freely write about what interested them and what they enjoyed or did not enjoy about their experience. For example, the main interests of travellers to Sydney, Perth, and Tasmania, according to Australian national statistics, were dining and shopping, but this may be due to the limited options provided by the tourism survey(s) and the fact that the tourism industry often prioritises commodities in their data collection to analyse economic impacts (NSW Government, 2018; Tourism WA, 2018; Tourism Tasmania, 2018). The content of TripAdvisor reviews provided additional detail for the potential visitor model and the results of that analysis are detailed in Chapter 5. Phase 1 thus, provided one step towards establishing a research-based visitor model that informs the potential audience of the IDN prototype. The next phase in the theoretical IDN creation framework is to determine what will be communicated to this potential audience.

4.3 Phase 2: Communication Goals for the IDN

The aim of the IDN is to function as a digital space that would be used before or after a visit to the Australian Convict Sites as a form of armchair travel. Interacting with the IDN beforehand aims to provide cultural heritage tourists with a historical context, visual overview of the site locations, and highlight points of interest so visitors can tailor their on-site visits to suit their interests. Cultural heritage tourists may choose to access the IDN during their visit, but the IDN system does not provide location-activated content. It is intended that the visitor would immerse themselves in the physical experience while at the sites rather than being immersed (or distracted) by the technology (digital narrative) while on site. Many travellers conduct various amounts

58 Armchair travel is a colloquial phrase to describe an emulated experience of travel through the consumption of various different travel media (e.g., website, videos, books) from the comfort of one’s armchair or home.

59 Location-activated content could be added to the prototype in the future or other new (similar) IDN systems, but it was out of scope for the nature of this project.
of pre-trip research and this IDN system was primarily designed for this purpose since there is a gap in the current market for a narrative system dedicated to cultural heritage tourism pre-trip planning (see Chapter 1-2).

The overall communication goal of the IDN is to capture and present a wider macro-narrative of the convict history by bridging cross-media content produced by the tourism industry, subject-matter experts, and users (i.e., members of the public). Existing digital content will be used to create an iterative product of shared cultural heritage with multiple perspectives and a non-linear story. As Conlan et al. (2013) explain, personalisation enhances the user experience and allows content or service providers to dynamically repurpose their offerings for different people or contexts, which makes reuse easier (p. 132) and in this case re-visits to the IDN more likely. Thus, the IDN’s rhetoric aims to provide a narrative that:

1. facilitates virtual site explorations,
2. provides a multi-perspective and multimodal IDN product on Australian convict history, and
3. inspires public participation.

Examples of further participation, include clicking on a hyperlink for more information (low-level participation), sharing the content with their social networks (medium-level participation), or visiting one or more of the convict sites (high-level participation).

These communication goals for the IDN also serve as variables to be measured in the IDN evaluation. Specific questions were developed for the evaluation surveys (Phase 7 as detailed in Chapter 6) based on these goals and the IDN product evaluation framework outlined in Chapter 3. The evaluation questions focus on whether produsers were provided with an emergent narrative structure that provides agency without creating ludonarrative dissonance, and whether the IDN inspires produsers to take further participatory action. The responses to the survey questions will be qualitatively framed in the context of the four modes of persuasion. Thus, the aim is to achieve emergent narratives (logos), user agency (i.e., the pleasure of control) (pathos), multimodality that enhances meaning-making (kairos), and inspiration for further produser action (ethos). These communication goals and tangible measures will be used to guide the invention phase (see Chapter 5) and how the survey questions were developed for the IDN evaluation phase (see Chapter 6). With the audience profile and
desired communication goals identified, the next phase in the theoretical creation framework is to determine the format for the IDN delivery.

4.4 Phase 3: iDoc as the Delivery Medium

The IDN system is based within the genre of non-fiction transmedia storytelling—a genre that incorporates many different delivery media. The main delivery medium for the mothership narrative\textsuperscript{60} will be a web-based interactive documentary (iDoc) that incorporates existing cross-media content through a process of sampling and remixing. Mobile applications were eliminated as a delivery medium option because they are often intended for on-site use, and this IDN is intended for pre-site (and post-site) visits and to be accessible when the produser is not on location. Another genre that was considered, but not selected was hypertext non-fiction (e.g., Twine) because it would limit the amount of multimodal content that could be used since existing authoring systems focus more on the text and less on video and maps, which are key modalities to providing people with a sense of the location through a visual layout of the land. The documentary genre was selected because it is one of the most powerful and popular genres of non-fictional narratives, it allows for the inclusion of a range of content modalities (e.g., text, video, image, audio, etc.), and is widely accessible from different devices. Furthermore, iDocs, unlike film-based documentaries, incorporate aspects of video games and provide users with control (Castells, 2011, p. 2). Interactive documentaries also have the features required for testing the hypotheses and objectives stated in Chapter 1 of this thesis.

The key features of iDocs are that they offer multiple options for choosing the narrative direction through a non-linear structure, they require active user participation, and are adaptive systems that can “keep changing until the collaboration and participation is sustainable or desired by the users or the systems in it” (Castells, 2001, p. 3). The case study was implemented as an iDoc on a website that functions as a mothership narrative prototype, but it may inspire revisions, additions, and expansions to the wider a transmedia narrative in future. The Australian Convict Sites and related tourist activities (e.g., museums, walking/bus tours) already exist as many

\textsuperscript{60} A “mothership” or “mother narrative” has been used in transmedia research to describe the origin of the storyworld or the original source. For example, the mothership in the Harry Potter transmedia storyworld is the first book in the series, The Philosopher’s Stone.
separate micro-narratives and users of these other resources may also connect and make attributions from these to the iDoc prototype. Thus, the iDoc builds on the existing transmedia narrative through reverse-engineering (bottom-up process) by remixing content (the invention method is detailed in the next chapter).

The decision regarding the software selection to create the iDoc, which is part of Phase 3, was considered before the invention, but selected after the multimodal discourse analysis was completed (as detailed in the next chapter). This follows the seven-phase theoretical framework where there was a back-and-forth between the phases of delivery and invention because the invention also informed the delivery requirements. There are a number of existing authoring systems (i.e., software) available to build IDNs with some being open-source and others enterprise-level (for a list of existing software, see Shibolet, Knoller & Koentiz, n.d.). The medium requirements of the iDoc prototype required software that was web-based and allowed for the inclusion of maps and multimodal content with hyperlinks. These requirements eliminated IDN authoring tools designed for other delivery platforms, such as hypertext narratives, video games, academic projects, journalism, or web portals. The authoring tool that best met the iDoc project requirements for this case study was Klynt—an enterprise software for which a student license was purchased (About Klynt, 2019). Klynt software has been used by journalists, photographers, documentary filmmakers, non-governmental organisations, media institutions and students (About Klynt, 2019). It offers the most flexibility for multimodal content integration with high-quality visual output and met the needs of the case study. With the pre-planning phases 1-3 complete, the next phase is the invention.
Chapter 5: Inventing the iDoc

The purposes of this chapter are threefold; firstly, it covers Phase 4 – Invention of the IDN for the case study; secondly, it investigates hypothesis #2 that there are gaps between cultural heritage tourism content produced by the tourism industry, subject-matter experts, and the public; and thirdly, it aims to provide a method that addresses in the limitations of existing approaches to creating cultural heritage digital products, such as a lack of narrative, personalisation, and public participation in the creation process (as highlighted in Chapter 2). The overarching invention process for the iDoc prototype follows a “theory-driven” cross-cultural research approach where specific hypotheses are tested through sampling various cultures that differ on target dimensions to validate the theoretical model (van de Vijver & Leung, 1997, p. 21).

The seven-phase theoretical framework for IDN creation is being tested, and the data collected was analysed to answer hypothesis #2 in this thesis. The cultural data collected, analysed, and remixed into an iDoc for the Australian Convict Sites serves as a proof of concept that the theoretical framework for IDN creation is applicable to non-fiction genres and demonstrates an example of an IDN for a cultural heritage context.

The following method exemplifies a new approach to transmedia narrative invention for non-fiction genres. The two main methods of creating transmedia narratives to date, as discussed in Chapter 2, are the snowball (the subsequent creation of multiple media narratives as a result of popularity) and system methods (designing one story to unfold across different media from the beginning) (Ryan, 2013). The method developed in this thesis introduces an approach called remixed transmedia, which is the curation and remixing of existing narratives into an IDN system (i.e., iDoc in this case study) based on the later arrangement and design phases of the framework (see Chapter 6). The iDoc prototype involves remixing existing content into a narrativized cultural heritage system that allows produsers to personalise their experience through the selection of the protostory options provided. This bottom-up approach to narrativizing cultural heritage employs content modelling as per Lawless et al.’s (2016) best practices in order to determine which protostories (i.e., content) on the Australian Convict Sites should be included in the iDoc system.
The hypothesis is tested through the cross-comparison of the three selected corpora of cultural heritage tourism related content. Van de Vijver and Leung (1997) state that testing a hypothesis ideally requires three or more cultures that differ systematically because the cross-cultural differences need to be maximised (p. 136). The systematic difference between the three corpora is who produces the content because they have specific perspectives and individual rhetorical purposes. For example, the tourism industry has employees hired to market experiences to generate capital, user-generated content is produced by members of the general public who may create social media posts for a variety of intrinsic (e.g., help others) and extrinsic (e.g., monetisation) reasons, and the expert-produced content, includes scholars, governments, and professional writers who publish primarily for educational reasons and the public dissemination of knowledge. Therefore, the following theory-driven approach to content modelling also investigates whether there are gaps between the cross-media content tourists may consult in pre-trip planning by examining a sample of qualitative content produced by the tourism industry, users (i.e., the public), and experts. Unlike quantitative studies that try to minimise study bias and maximise generalisability by using a representative sample of the general population, qualitative studies can offer a window-like view into a specific phenomenon by examining a cross-section of a larger population (Koerber, 2008, p. 461). This approach lets the data speak to what themes are of interest to the primary target audience of cultural heritage tourists and the results of the following analysis of the three corpora led to the formation of a content model for the iDoc prototype on the Australian Convict Sites.

5.1 Phase 4 Method: Inventing a Remixed Transmedia Narrative System

The complexity of the three selected corpora, because they are multimodal (e.g., text, image, video) and appear in different media (e.g., printed books, blogs, and photos), necessitated multiple methods of analysis to develop a content model for the iDoc prototype. Content modelling involves trying to identify the characteristics that may be pertinent to the users exploring the content in order to highlight the key related

---

61 The Oxford English Dictionary’s first citation of the word corpus in the linguistic literature is dated 1956, where it was used to mean “the body of written or spoken material upon which a linguistic analysis is based” (McCarthy & O’Keeffe, 2010, p. 5).

62 Quantitative research tries to minimise study bias and maximise generalisability by using a representative sample of the general population (Koerber, 2008, p. 461).
entities (Lawless et al., 2016, p. 175). The corpora were analysed through a mixed-methods\(^{63}\) approach that included both distant reading and close reading techniques to identify themes of interest to cultural heritage tourists so that the iDoc prototype can present a “guide” (Lawless et al., 2016) consisting of an array of entry points into different possible narratives.

Distant reading was used because it is a technique that helps generate an abstract view by shifting from observing individual textual content toward visualising global features of multiple texts (Jänicke et al., 2015, p. 84). Distant reading was performed using a variety of computational tools where possible, but some datasets required close reading due to the quantity and nature of the data as well as cases where distant reading was not fruitful for identifying content themes. Close reading involves the “thorough interpretation of a text passage by the determination of central themes and the analysis of their development” (Jänicke et al., 2015, p. 84). Since the goal of analysing the corpora was to gain a birds-eye view of the themes appearing across the three corpora to inform the invention of the possible entry points into the iDoc protostories, distant reading was used where possible and close reading was used when necessary. In addition to the themes, the analysis aimed to identify the most common modalities used across the corpora to determine which modalities should be used in the iDoc and for which types of narrative content. As Gunther and Quandt (2015) explain, the deductive method of text analysis is based on a pre-defined codebook with a set of relevant categories (p. 2), and this allows for the inductive interpretation to emerge from the results. Distant reading was used to deduce the themes from each dataset so the narratives for the iDoc protostories were based on the data serving as evidence of user needs and preferences, rather than a top-down approach of unsubstantiated impressions of what the content creator believes should be included in protostory development. A combination of distant and close reading techniques provided the overall approach to analysing the corpora, but more specific methods and frameworks were required to accommodate the selected datasets and produce the desired results.

\(^{63}\) Advantages of applying a mixed methods approach, include enhancing the validity or trustworthiness of inferences and assertions with quantitative data; providing deeper exploration of contextual factors; the ability to interpret variables with qualitative data; and strengthen the acceptability of the results of the evaluation across different disciplines (Jason & Glenwick, 2016, p. 236).
The invention of the iDoc content model was based on a systematic methodology termed *multimodal discourse analysis*, which was developed by scholars in linguistics⁶⁴, semiotics and multimodal studies (Kress & van Leeuwen, 1996; Bateman, 2008; Hiippala, 2014; O’Halloran, 2011; Hiippala, 2014). Multimodal discourse analysis was applied to this case study as a validated, repeatable method of cultural data analysis. Multimodal discourse analysis is “a relatively new set of concepts and approaches that extend the study of language to combine interpretation of the construction of meaning with the other phenomena that materialise within a communication structure, such as image, music, gesture, symbols and, increasingly multimodal analysis annotation” (Krisjanous, 2016, p. 342). Multimodal discourse analysis is a form/method of distant reading that is used by scholars studying multimodal content. At present, “no techniques exist that truly combine multimodal analysis, data mining, and information visualisation simultaneously, due to the inherent complexity and the challenges of disciplinary and theoretical integration” (O’Halloran et al., 2018, p. 23). To address this challenge, O’Halloran et al. (2018) proposed a research framework that integrates qualitative and quantitative methods for application to communications research topics (p. 23). O’Halloran et al.’s framework (2018) involves the process of (a) determining the multimodal dataset including metadata and contextual information, (b) automated data processing using algorithms and manual analysis to identify key systems, and (c) identifying discourse patterns in interactive visualisations that allow for the exploration of content and tone of messages over time and space (p. 24). O’Halloran et al.’s (2018) three-step framework was applied to a multimodal discourse analysis on the three corpora of cultural heritage tourism content, which is detailed in the following sections.

### 5.1.1 Determining the Data Sample

The overarching sampling technique used was *purposeful* because the selection is based on obtaining a maximum variation with a variety of perspectives represented (Koerber, 2008, p. 464) and determined through specific selection criteria (Breckenridge, 2009, p. 118). As the iDoc prototype aims to include multiple perspectives, purposeful sampling was determined by a set of inclusion/exclusion

---

⁶⁴ Corpus linguistics is “perhaps most readily associated in the minds of linguists with searching through screen after screen of concordance lines and wordlists generated by computer software, in an attempt to make sense of phenomena in big texts or big collections of smaller texts” (McCarthy & O’Keeffe, 2010, p. 3).
criteria based on the research questions generated from prior knowledge of the area and a preliminary literature review. The criteria for the data sample collection for this thesis was limited to the case study of the 11 UNESCO World Heritage Australian Convict Sites and the associated time period between 1788 and 1868, when 806 ships transported 165,000 people to Australia (UNESCO, 2020). The sample size was determined through mixed purposeful sampling, which depends more on quality rather than quantity (Koerber, 2008, p. 467-468). In quantitative research, the sample size is determined by statistical formulas to ensure the findings are generalisable to the population studied, but generalisability is not the primary goal of this investigation (Koerber, 2008, p. 467-468). In qualitative studies, the specific sample sizes are determined by the research purpose, influenced by time and funding resources and as long as the size fulfils the purpose, it can be justified (Koerber, 2008, p. 468). The transdisciplinary approach of this thesis may give rise to tensions between the generalisability and replicability of the results, but to mitigate potential challenges to the methodology, the sample selection process is documented in detail to show how it serves the purpose of examining existing narratives across the three corpora (i.e., sectors of content producers). The three different corpora of content producers, the tourism industry, members of the public (i.e., UGC), and experts (e.g., GLAM staff, scholars, historians, governments) each have three datasets. These nine datasets required different approaches to establishing the sampling criterion. Each of the three corpora was selected based on the hypothesis that there are differences between the content-producing sectors and the datasets were selected using mixed purposeful sampling because each required a different sampling strategy (see Table 5 for an overview of sampling techniques). The three corpora and associated datasets are described in more detail in the three following sections to enhance the reliability and validity of this mixed-methods approach.

---

65 There are many non-UNESCO designated heritage sites associated with Australian convict history and there are associated events and narratives prior to 1788 and post 1868, but these present too large of a scope to adequately cover in a prototype iDoc.

66 Mixed purposeful sampling is “choosing more than one sampling strategy and comparing the results emerging from both samples” (Collins, Onwuegbuzie, Jiao, 2006, p. 85).
Table 5. Sampling Techniques for Corpora and Corresponding Datasets

<table>
<thead>
<tr>
<th>Corpus/dataset description</th>
<th>Sampling technique applied</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corpus 1: Tourism Industry Content</strong></td>
<td></td>
</tr>
<tr>
<td>Dataset 1: Travel guidebooks</td>
<td>Critical case sampling</td>
</tr>
<tr>
<td>Dataset 2: Travel brochures (on-site field research)</td>
<td>Critical case sampling</td>
</tr>
<tr>
<td>Dataset 3: Australian World Heritage Site Websites</td>
<td>Critical case sampling</td>
</tr>
<tr>
<td><strong>Corpus 2: User-generated Content</strong></td>
<td></td>
</tr>
<tr>
<td>Dataset 4: TripAdvisor reviews on the WHS</td>
<td>Critical case sampling</td>
</tr>
<tr>
<td>Dataset 5: WordPress blogs</td>
<td>Stratified purposeful sampling</td>
</tr>
<tr>
<td>Dataset 6: Instagram geotagged photos and videos</td>
<td>Stratified purposeful sampling</td>
</tr>
<tr>
<td><strong>Corpus 3: Expert-produced Content</strong></td>
<td></td>
</tr>
<tr>
<td>Dataset 7: Expert websites/blogs</td>
<td>Stratified purposeful sampling</td>
</tr>
<tr>
<td>Dataset 8: Academic papers (articles and theses)</td>
<td>Critical case sampling</td>
</tr>
<tr>
<td>Dataset 9: Songs/ballads (websites)</td>
<td>Stratified purposeful sampling</td>
</tr>
</tbody>
</table>

5.1.1.1 Corpus 1: Tourism industry content

The first corpus includes datasets from three different sources of tourism industry content which are: professionally published travel guidebooks, materials collected on-site during field research, and the websites for each Australian Convict Site. The tourism industry produces a variety of content, but published travel guidebooks are still a highly popular source of tourism information. The most popular (e.g., best-selling) publishers of travel guidebooks, also widely available in most bookstores, are *Lonely Planet*, *Frommer’s*, *Fodors*, *Rough Guides*, and *DK Eyewitness Guides* (Stoller, 2018). The latest available copies that could be purchased at the time this research was conducted (January 2019) were: *Lonely Planet Australia* (2017), *Frommer’s Australia* (2019), *Fodor’s Travel Essential Australia* (2018), *Rough Guides Australia* (2017), and *DK Eyewitness Australia* (2018). Each guidebook was analysed in its printed form because not all selected guidebooks were available in e-book format and computational analysis may not have been feasible on all due to copyright restrictions and digital rights management for publications on e-reading devices. The analysis of each travel guidebook was limited to specific sections rather than the whole book because the focus of the iDoc is on Australia’s convict history and the 11 UNESCO WHS. The sections of each guidebook included in the analysis

---

67 Critical case sampling is “choosing settings, groups, and/or individuals based on specific characteristic(s) because their inclusion provides the research with compelling insight about a phenomenon of interest” (Collins, et al., 2006, p. 82).
68 Stratified purposeful sampling is when the “sampling frame is divided into strata to obtain relatively homogeneous subgroups and a purposeful sample is selected from each stratum” (Collins et al., 2006, p. 85).
were any introductory paragraphs\textsuperscript{69} covering Australian history or convict history and the content on the 11 sites.

The second dataset within the travel industry corpus was collected from fieldwork visits (February 2019) to eight\textsuperscript{70} of the 11 locations, including: (1) Brickendon and Woolmers (classified as one site by UNESCO), (2) Cascades Female Factory, (3) Coal Mines Historic Site, (4) Port Arthur Historic Site, (5) Darlington Probation Station (Maria Island), (6) the Old Government House, (7) Cockatoo Island, and (8) Hyde Park Barracks (the exterior only as the Museum was closed for renovations at the time of the site visit). The data collected included the brochures distributed to visitors upon entry to the site, photographs taken by the researcher, and fieldnotes on narratives told by tour guides on-site.\textsuperscript{71} A total of 10 printed brochures and leaflets were collected, two each from Port Arthur, Cascades Female Factory, and the Old Government House; and one each from Brickendon, the Coal Mines, Maria Island, and Cockatoo Island. The printed brochures were classified into three types: (1) visitor guides (as labelled) which were intended for on-site use, (2) marketing brochures aimed at potential visitors to the sites, and (3) leaflets—a single or double-sided document.

The third dataset within the travel industry corpus were the websites for each of the Australian Convict Sites, totalling 12 websites because Woolmers and Brickendon have individual websites (see Table 6). Most WHS had an official website except for Darlington Probation Station which was mentioned on the Encounter Maria ferry operator for Maria Island; the Hyde Park Barracks Museum is a subsection of Sydney Living Museums website; the Old Government House is a section on the National Trust website; and the Old Great North Road is a single web page within the NSW Office of Environment and Heritage website.

\textsuperscript{69} Sections that provided a general introduction to the country’s highlights or how to use the guidebook were not examined.

\textsuperscript{70} The other three sites – KAVHA, Old Great North Road, and Fremantle Prison – are located in more remote areas and would have required further funding and time to visit.

\textsuperscript{71} The fieldnotes were used as a supplementary content source when developing the protostories (in Chapter 6) rather than being analysed in this chapter.
Table 6. The UNESCO WHS Websites Dataset

<table>
<thead>
<tr>
<th>Name of WHS</th>
<th>Website address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brickendon Colonial Farm Village &amp; Accommodation</td>
<td>brickendon.com.au</td>
</tr>
<tr>
<td>Cascades Female Factory</td>
<td>femalefactory.org.au</td>
</tr>
<tr>
<td>Coal Mines Historic Site</td>
<td>coalmines.org.au</td>
</tr>
<tr>
<td>Cockatoo Island</td>
<td>cockatooisland.gov.au</td>
</tr>
<tr>
<td>Darlington Probation Station</td>
<td>encountermaria.com.au</td>
</tr>
<tr>
<td>Fremantle Prison</td>
<td>fremantleprison.com.au</td>
</tr>
<tr>
<td>Kington and Arthur’s Vale</td>
<td>kavha.gov.au</td>
</tr>
<tr>
<td>Old Government House</td>
<td>nationaltrust.org.au/old-government-house</td>
</tr>
<tr>
<td>Old Great North Road</td>
<td>environment.nsw.gov.au/parks-reserves-and-protected-areas/types-of-protected-areas/world-heritage-listed-areas/Australia-convict-sites-old-great-north-road</td>
</tr>
<tr>
<td>Port Arthur Historic Site</td>
<td>portarthur.org.au</td>
</tr>
<tr>
<td>Woolmers Estate</td>
<td>woolmers.com.au</td>
</tr>
</tbody>
</table>

5.1.1.2 Corpus 2: User-generated content

The three sources\(^2\) of user-generated content (UGC) selected for analysis were: TripAdvisor reviews for the Convict WHS, WordPress blogs that cover the WHS, and Instagram photos and videos geotagged at the WHS. TripAdvisor was selected as a data source because it is one of the largest travel review websites with 661 million reviews and an average of 456 million unique monthly visitors—as of 17 October 2018 when the data were collected (About TripAdvisor, 2018). TripAdvisor provides a convenience sample of visitors to the sites and the reviews are user-generated rather than directed by specific survey questions. TripAdvisor reviews were available for only eight of the 11 Australian convict sites at the time of data collection\(^3\)

---

\(^2\) Microblog content (e.g., Twitter) was not gathered because the content would have been very short (e.g., 140 characters or less) and the text data would have been “dirty” with many characters, symbols, and URLs leaving very few words for analysis.

\(^3\) In October 2018, there were no TripAdvisor pages for Brickendon and Woolmers Estates, Darlington Probation Station, and the Old Great North Road.
and 11,295 reviews written in English were analysed for Port Arthur Historic Site, Fremantle Prison, Cascades Female Factory, Hyde Park Barracks Museum, Norfolk Bay Convict Station, Coal Mines Historic Site, and Old Government House Parramatta. In addition to the demographic information collected from TripAdvisor during Phase 1 (see Chapter 4) of the theoretical framework being applied, the specific data variables of interest for the UGC content analysis were the title, text of the review, and hyperlinks of user-uploaded images. The data were collected to find the emergent themes of reviewer interests based on what they chose to write.

The intent of sampling the second dataset type, blogs, was to understand what themes members of the public have posted about in relation to the Australian Convict Sites. Blogs are longer pieces of content than TripAdvisor reviews, the content in a single post may span beyond a review of the facilities and on-site experience, and they often contain more multimodal content since the content management systems provide many accessible tools for blog writers. However, sampling blogs is difficult for many reasons; there are millions of blogs, they exist on many different hosting websites, they can become abandoned when the author is no longer actively blogging, and may have access-restrictions (i.e., private blogs) (Li & Walejko, 2008, p. 279-296). A preliminary search was conducted using the keywords “Australian convicts” on Google because it is a broad enough term to determine if any bloggers were writing about convict history or the WHS. A systematic search was then conducted using the keywords “Australian convicts” on WordPress, Blogger, and Medium (e.g., “Australian convicts site:wordpress.com”; “Australian convicts site:blogger.com”, etc.). This initial search resulted in the majority of results appearing on WordPress. Therefore, the blogs on the WHS were gathered only from WordPress for a more consistent sample. The 159 blog posts were collected (on March 11, 2019) from the first five pages of the Google search because beyond these search results the content was not necessarily about Australian convict history and the same blog sites began appearing duplicated in the search results. A second search was conducted using keyword phrases74 of the 11 Australian Convict Sites’ names. Blogs excluded from the sample were any posts that did not focus topically on one of the WHS, posts that only

---

mentioned the WHS in one sentence because it was not the primary subject of the post, and any non-English language posts. Blogs that were identified as written by experts (e.g., historians and academics) during the gathering phase were sorted into a separate dataset within the expert-produced corpora (see corpus 3 in the next section).

The third dataset of UGC was Instagram posts based on the geo-location of the 11 Australian Convict Sites and were collected on 10 May 2019. Instagram, a social networking service, is intended for sharing user-generated photos and videos and had 1 billion users as of June 2018 (Statistica, 2019), which is more users than Imgur and Flickr. Geotagged photos were selected because it reduced issues with possible “hashtag jacking” or extraneous non-related posts causing noise or irrelevant data in the sample. For example, a search for “Port Arthur” on Instagram revealed three popular hashtags: #portarthurtassie, #portarthurtexas, and #portarthur. A sample test through a close reading of the photos within the #portarthur hashtag showed a mix of photos from Port Arthur Historic Site and Port Arthur Texas. Thus, selecting geotagged content ensured the data were from the Australian Convict Sites (Brickendon and Woolmers being treated here as two geotagged locations). Cockatoo Island had three geotagged locations, so all results were collected. The only exception to collecting geotagged photos was the Old Great North Road because it is not a single pinpointed location (it had less than 10 geotagged photos at the time of collection) and so the hashtag #oldgreatnorthroad was scraped instead. Instagram scraping was completed using a Python script called “Instagrab” (Wikstrom, 2019). The data collected were photos, videos and associated metadata for each post including the 40 most-recent comments (in order to make the collection as fast and non-intrusive as possible) and the most common tags (comments and captions) associated with a single user account ID (i.e., short code) (Wikstrom, 2019).

5.1.1.3 Corpus 3: Expert-produced content

The expert-produced content was divided into the following three datasets: (1) academic papers (journal articles and theses) on the Australian convict sites and associated transportation history, (2) websites/blogs produced by librarians,

---

75 Pinterest was not selected because although it uses analytics to predict future travel trends (Business, 2019), its primarily purpose is a “visual discovery engine” used for sharing (i.e., pinning) other people’s photos onto digital pin boards rather than pinning personal photos (“What is Pinterest”, 2019).

76 For updated statistics on photo sharing platform rankings see: [http://www.ebizmba.com/articles/photo-sharing-sites](http://www.ebizmba.com/articles/photo-sharing-sites)
governments, historians, and scholars on the Australian Convict Sites and history, and (3) convict ballad/song lyrics. Academic papers were collected using critical case sampling\(^\text{77}\) and were discovered during the fieldwork research. A workshop was held at the University of Tasmania on February 19, 2019 regarding Australian convict historical records and was attended by leading experts in convict history and archives, and archaeological excavations at the Coal Mines and Port Arthur. The published journal articles by Maxwell-Stewart and Tuffin were collected (in May 2019) as critical case sources along with other articles appearing in a keyword search for “Australian convicts,” “Australian convict history,” and “heritage sites” totalling 58 documents. The expert-produced websites and blogs were, as mentioned above, collected at the same time keyword searches were conducted for sampling user-generated blogs and it produced a total of 30 websites. The songs and ballads were similarly discovered during keyword searches for blog and web content and are primary sources important to Australian convict heritage (Mitchell, 2019). A total of 16 websites with songs and ballads were collected as the text-based sample of content.

Besides the nine datasets selected, other content sources collected were databases, published novels, films, Wikimedia Commons (for images), and photographs taken during the on-site visits to the eight convict WHS. Existing archives and databases were found based on referral (by Maxwell-Stewart), in the bibliographical references of academic articles, and through online research. These diverse multimodal resources could not be systematically sampled because the amount of data available would have been too comprehensive to analyse computationally, and for the purposes of content modelling and determining the common modalities used in existing convict narratives. Therefore, these tertiary resources, while not analysed as part of the three corpora, were used as supplementary sources of content for the invention of iDoc protostories (see Chapter 6). The nine qualitative datasets, within the three corpora, described above were then analysed to identify the narrative themes that commonly appeared across the corpora, common modalities, and different perspectives to inform the invention of the iDoc’s protostories.

\(^{77}\) Critical case sampling is selecting a small number of important cases to “yield the most information and have the greatest impact on the development of knowledge” (Patton, 2015, p. 276).
5.1.2 Data Analysis Methods for the Nine Datasets

Continuing with O’Halloran et al.’s (2018) methodological framework, the next steps after data sampling were: data processing using algorithms (i.e., distant reading) and manual analysis to identify key systems (i.e., close reading), and then identifying discourse patterns in interactive visualisations (i.e., cross-comparison) (p. 24). A commonly used method in the social sciences of uncovering cultural or content-based patterns in different texts is content analysis. Content analysis is a systematic technique for coding symbolic content, structural features, and semantic themes found in communications that involve the collection of both qualitative and quantitative data (Bauer, 2000, p. 131-132). For example, it has been used for in-depth analyses of written media, such as advertising, communication and journalism and it has been increasingly used to analyse Internet-based content (Herring, 2009, p. 2). Content analysis methods often involve the researcher developing codebooks that contain specific qualities that are documented across a dataset as a systematic way of comparing (Bauer, 2000, p. 139). Previously-developed codebooks can be reused by future researchers and the resulting data analyses make qualitative studies replicable and valid. Content analysis methods, commonly used by communications scholars to study text-based corpora, has been adapted to analyse modalities including photos, radio, television and film, but multimodality poses a challenge for identifying units of analysis (Herring, 2009, p. 8). The corpora for this case study includes multimodal content, such as images embedded in websites and blogs, videos, audio files, images/scans of historical archives and artefacts, and longer texts (e.g., academic articles). New communication technologies, such as social media platforms, have called for new methods of analysis that facilitate the systematic identification of patterns in multimodal, linked, and interactive content (Herring, 2009, p. 5), which O’Halloran et al. (2018) and other scholars have termed multimodal discourse analysis.

In order to determine which methods of analysis should be used for each dataset, existing frameworks for print and digital media analysis were drawn upon to develop two codebooks. The printed artefacts were analysed based on the Genre and Multimodality Model (GeM) developed by Bateman (2008), expanded upon by Hiippala (2015) in his study of tourism brochures, and further modified for this case study. The GeM framework (Bateman, 2008), with Hiippala’s (2015) additions for a
tourism context, provided the foundation for the two codebooks developed for analysing the nine datasets in this thesis and helped increase the reliability (i.e., consistency) of qualitative data coding. Codebook 1 and 2, used for close reading, are discussed in further detail, followed by a description of how Voyant Tools and PixPlot were used for distant reading (see Table 7).

**Table 7. Overview of Corpora and Associated Methods of Analysis**

<table>
<thead>
<tr>
<th>Dataset description</th>
<th>General method of analysis</th>
<th>Specific Frameworks &amp; Tools Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corpus 1: Travel industry content</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel guidebooks</td>
<td>Close reading</td>
<td>Codebook 1</td>
</tr>
<tr>
<td>Tourism brochures</td>
<td>Close reading</td>
<td>Codebook 1</td>
</tr>
<tr>
<td>Australian Convict Sites’ Websites</td>
<td>Distant reading &amp; Close reading</td>
<td>Voyant Tools &amp; Codebook 2</td>
</tr>
<tr>
<td><strong>Corpus 2: User-generated content</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TripAdvisor reviews</td>
<td>Distant reading</td>
<td>Voyant Tools</td>
</tr>
<tr>
<td>WordPress blogs</td>
<td>Distant reading &amp; Close reading</td>
<td>Voyant Tools</td>
</tr>
<tr>
<td>Instagram geotagged photos and videos</td>
<td>Distant reading</td>
<td>PixPlot &amp; Voyant Tools</td>
</tr>
<tr>
<td><strong>Corpus 3: Expert-produced content</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expert websites/blogs</td>
<td>Distant reading</td>
<td>Voyant Tools</td>
</tr>
<tr>
<td>Academic papers (articles and theses)</td>
<td>Distant reading &amp; Close reading</td>
<td>Voyant Tools &amp; Codebook 1</td>
</tr>
<tr>
<td>Songs/ballads (websites &amp; YouTube videos)</td>
<td>Close reading</td>
<td>Codebook 1</td>
</tr>
</tbody>
</table>

**5.1.2.1 Codebook 1: Analysis for printed artefacts**

The first codebook for analysing printed artefacts was based on the Genre and Multimodality (GeM) Model, which is “a single set of tools that can provide reproducible, and therefore evaluable, analyses of what is involved in the multiplication of meanings discovered” across different multimodal artefacts (Bateman, 2008, p. 2). GeM is used for comparing and theorising how artefacts combine text, images, and other modes of communication (Bateman, 2008, p. 9-10). The GeM Model (Bateman, 2008) consists of four analytical layers; the base, layout, rhetorical, and navigation layers that are used to analyse the “what” or narrative discourse, and the “how.” Firstly, the base layer identifies the minimal elements that

---

78 Discourse (sjuzet) is the expression or means by which content is communicated (Chatman, 1978).
serve as the common denominator for interpretive and textual elements and the layout elements in a page or document (Bateman, 2008, p. 110). Secondly, the layout layer is a hierarchy of units based on similar typographical features consisting of the layout structure, *area model*, and realisation information (Hiippala, 2015, p. 40-41). The area model represents the physical location information for each piece of content and can provide information about how the semiotic modes are configured for specific types of communicative works (i.e., genres) and how rhetoric is formed or affected (Hiippala, 2015, p. 43). Thirdly, the rhetorical layer aims to “identify the particular functional contributions made by the elements of a document to the intended communicative purposes of that document as a whole” (Bateman, 2008, p. 144). The focus of Bateman’s (2008) rhetorical layer is to examine spatiality as a principle of organisation in multimodal documents where segments may be adjacent to each other in any direction and thus, affect their visual perception and reader understanding (Hiippala, 2015, p. 51). Finally, the navigation layer of Bateman’s (2008) GeM Model describes internal or external references to the reader that aid interaction with the multimodal document (e.g., references to a page number, indices, map pin markers, colour-coding, etc.) (Hiippala, 2015, p. 52). Hiippala (2015) notes that the data coded by all four analytical layers of Bateman’s (2008) GeM Model needs to be brought together for cross-layer analysis, which can be done by drawing upon applicable communication theories (p. 53). The analysis for this thesis is focused on narrative discourse across the three different corpora and draws upon the theoretical framework for creating IDNs as established in Chapter 3.

The GeM Model provides a strong foundation for units of analysis for printed documents, but it required some modifications for application to the selected datasets on the Australian Convict Sites. Multimodal documents could be analysed to an “infinite level of detail” (Hiippala, 2015; Forceville, 2017), but the details included in the base layer of Cookbook 1 for this case study correspond to the level of detail required to provide insight into the research questions (to view Codebook 1, see Appendix 3 – Multimodal Discourse Analysis Codebook Templates). The base layer units added for this case study included corporate logos, number of paragraphs, the number of pages/panels, Hiippala’s (2015) addition of maps as a base unit for his

---

79 Logos in this case refers to the graphically designed icons that are used to identify a company or organisation rather than logos in the context of rhetoric.
research on tourism brochures, and dividing photos into the two categories of modern\textsuperscript{80} photos (i.e., taken with digital cameras) and historical photos from an archive (scanned images and/or those taken with film cameras) since the topic is heritage sites and may include both types of photos as a pilot test of the codebooks showed. The base layer units eliminated from Bateman’s (2008) model were “elements” which lacked a clear definition and “sentences” because they are too granular for purposes of content modelling through distant reading. The layout layer was analysed differently in this thesis because the iDoc prototype was created in a digital medium rather than as a printed document. Instead of using precise measurements to determine the content’s location, as Hiippala (2015) did in his study of tourism brochures, approximations were used to compare the frequency and types of modalities used and the content themes across the different media. The realisation information layer describes aesthetic features such as the font size, weight, colour and style and types of photos, although there is no widely accepted and “empirically motivated set of properties” for describing and characterising visual content in multimodal documents (Bateman, 2008; Hiippala, 2015). This realisation information layer is more subjective and the visual aesthetic assessment was used to gain a high-level overview of the types of branding motifs used in different publications. Based on the theoretical framework (in Chapter 3), the rhetorical units of analysis incorporated into Codebook 1 include (when it was possible to identify clearly) the: intended purpose/vision, intended audience, creation/funding body, publication date, “characters” (i.e., people), the mention of UNESCO WHS designation, calls to action, and tone of language. These additions aim to analyse the “what” or “story”\textsuperscript{81} content in the datasets (for an summary of these layers, see Codebook 1 in Appendix 3 – Multimodal Discourse Analysis Codebook Templates).

5.1.2.2 Codebook 2: Multimodal discourse analysis for websites

The second codebook builds on Codebook 1 by incorporating Pauwels’ (2012) framework of for analysing websites as “cultural expressions” with some adaptations (see Codebook 2 in Appendix 3 – Multimodal Discourse Analysis Codebook Templates). Pauwels’ (2012) framework was developed not only to decode cultural

\textsuperscript{80} The term modern is used in this thesis to mean photography that relates to “the present or recent times as opposed to the remote past” (“Modern”, 2020).

\textsuperscript{81} The story (histoire/fabula) is the content or chain of events (Chatman, 1978).
information on websites, but also to facilitate research on cultural differences between countries, ethnicities, organisational cultures or small groups from different perspectives, and account for medium-specific modes, how they interplay, their origin and purpose (p. 248). Pauwels’ (2012) framework includes six layers—most of which correlate with the GeM model (see Table 8).


<table>
<thead>
<tr>
<th>Layer</th>
<th>Pauwels’ (2012) framework</th>
<th>Bateman’s GeM Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Preservation of first impressions and reactions</td>
<td><em>Not applicable</em></td>
</tr>
<tr>
<td>2</td>
<td>Inventory of salient features and topics</td>
<td>GeM Base Layer</td>
</tr>
<tr>
<td>3</td>
<td>In-depth analysis of content and formal choices</td>
<td>GeM Layout Layer</td>
</tr>
<tr>
<td>4</td>
<td>Embedded points of view or voice and implied audiences and purposes</td>
<td>GeM Rhetorical Layer</td>
</tr>
<tr>
<td>5</td>
<td>Analysis of information organisation and spatial priming strategies</td>
<td>GeM Navigation Layer</td>
</tr>
<tr>
<td>6</td>
<td>Contextual analysis, provenance and inference</td>
<td>GeM Rhetorical Layer</td>
</tr>
</tbody>
</table>

Pauwels’ (2012) concept of the “first impression” does not overlap conceptually with any layer of Bateman’s (2008) GeM Model. Pauwels’ description of the first impression is vague and could be applied by different researchers in an infinite number of ways, especially across different cultures. Thus, the conceptualisation of the first impression was further grounded in Codebook 2 by drawing upon a detailed study conducted by Krisjanous (2016) on dark tourism websites because it provided more specific qualitative measures, and dark tourism applies to the Australia Convict Sites. Dark tourism encompasses travel to a site where mass loss, death or atrocity has occurred and differs from other niches of tourism because it draws attention to locations that are known for dark events (Krisjanous, 2016, p. 343). The Australian Convict Sites fall within dark tourism, a further sub-niche of cultural heritage tourism, because convicts transported to these historic sites were imprisoned, sentenced to hard labour, and punished for behavioural infractions. Krisjanous’ (2016) multimodal discourse analysis of 25 dark tourism websites across
14 countries\textsuperscript{82} highlighted some common qualities among more serious/dark websites and less serious/light websites. These qualities were used as units to evaluate the first impressions of the Australian Convict Sites’ websites. In sum, Codebook 2 represents an amalgam of units based on the frameworks and studies conducted by Bateman (2008), Hiippala (2015), Pauwels (2012), Krisjanous (2016) as well as units that were added after pilot testing the codebook (see Appendix 3 – Multimodal Discourse Analysis Codebook Templates).

These two codebooks provided a framework of common qualities that were examined across the nine datasets. They increase the repeatability of this multimodal discourse analysis because other researchers can see how the codes were used and could apply these codebooks to future studies.

5.1.2.3 Voyant Tools and PixPlot

In addition to the two codebooks, two software were used for the multimodal discourse analysis. Topic modelling\textsuperscript{83} is a method of finding meaning in a large volume of text and generating new ways of looking at content, materials, or qualitative data that emerge from the data rather than seeking to prove that a preconceived idea is correct (Graham, Milligan, & Weingart, 2015, p. 119-120). This concept was modified for the purpose of content modelling the iDoc protostory themes, identifying common modalities of content used, and to address whether there are gaps between the three corpora. Although topic models are frequency-based descriptions and visualisations are effective methods of getting to know big data, they are only a starting point acting as a lens through which material can be examined through a closer reading (Graham et al., 2015, p. 120). Text analysis tools, commonly used for topic modelling purposes, have weak or non-existent semantic capabilities because “they count, compare, track and represent words, but they do not produce meaning—we do” (Sinclair & Rockwell, 2015, p. 288). Text analysis tools are a method of distant reading where “the text itself disappears” and, as Moretti (2013) explains, in order to understand the system in its entirety, we must accept losing something. We always pay a price for theoretical knowledge: reality is indefinitely rich;

\textsuperscript{82} Krisjanous (2016) selected dark tourism websites from Australia, Cambodia, England, Hungary, Japan, Latvia, New Zealand, Poland, Rwanda, Scotland, South Africa, Turkey, Ukraine, and USA, which suggests at least some degree of cross-cultural applicability.

\textsuperscript{83} Topic models “infer the hidden structure based on the resulting high co-occurrence of groups of words” (Gunther & Quandt, 2015, p. 11).
concepts are abstract, are poor. But it’s precisely this ‘poverty’ that makes it possible to handle them, and therefore to know. This is why less is actually more (p. 48-49).

This case study used computational tools on the digital datasets to identify the content themes, most-frequently-used multimodalities, and to determine whether there were any differences between the three corpora. The results were used to determine what themes or micro-narratives should be included and remixed into a macro-narrative about the Australian Convict Sites in the iDoc prototype. The digital datasets were large enough to warrant the use of software to analyse the collected texts and images. However, some datasets were small enough that the further step of close reading was needed to provide definitive answers for the iDoc prototype invention.

The computational tools selected were Voyant Tools (Sinclair & Rockwell, 2016) for textual content and PixPlot (YaleDHlab, 2018) to analyse the photos collected. Voyant Tools were selected because it is open-source and provides visualisations for big data analysis. Sinclair and Rockwell (2015) explain that Voyant Tools accumulate perspectives from many tools in order to generate questions for further investigation, they can be used for many forms of analysis, and they address a variety of research questions across disciplines (p. 288). Several tools were used including Summary, Cirrus, Document Terms, Contexts, and Topics, which were used in different combinations for different datasets (see Image 6 for sample results from Voyant Tools). Voyant Tools were used to analyse the Australian Convict Sites’ websites, WordPress blogs, Instagram comments, expert websites, academic publications, and the songs/ballads (see Table 7). The textual data from TripAdvisor and Instagram comments were uploaded as CSV files to Voyant Tools and website pages were uploaded as HTML files.

The results produced in Voyant Tools for some datasets necessitated further data cleaning to remove additional “stop words.” For example, Fremantle Prison’s website included “open sub-navigation” in the HTML for each page and this phrase produced the highest word counts, so they were added to the list of stop words. Similarly, the Instagram comments were “dirty” datasets due to the high use of

---

84 The live Voyant Tools’ website is useful for a smaller number of files (e.g., 30 or fewer) and a local server was downloaded to process the larger datasets (e.g., Fremantle Prison website which had over 240 web pages).
85 Stop words are words that are filtered out before a dataset of text is processed and they are generally the most common, and thus uninformative words, in the English language such as “a,” “the,” and “and.”
emojis which Voyant Tools converts into symbols, rendering them not analysable as text-based output. The emojis in the comments were reviewed through a close reading of the datasets. The Instagram images were analysed using PixPlot, a code that can be used to “visualize tens of thousands of images in a two-dimensional projection within which similar images are clustered together” (YaleDHlab, 2018). The similar images can be grouped in PixPlot into as many clusters as needed and then the researcher can identify common themes or motifs (see Image 7). As there is no standard or recommended number of clusters, a few pilot tests of the Instagram photos showed that grouping images into five clusters was the most informative.

Image 6. Voyant Tools Screenshot Sample for Cascades Female Factory

86 Emojis are digital images or icons that represent an emotion or concept and on HTML web pages they appear as images but in plain text extracted from HTML web pages, they appear as a collection of symbols (e.g., &#128515 is a smiling face).
The above-described methods for the Phase 4 invention covered the selection process and rationale for the three selected corpora and corresponding nine datasets as well as the specific methods and software used to conduct the multimodal discourse analysis. Continuing with O’Halloran et al.’s (2018) framework, the next step after having determined the dataset and processing it using computation methods was identifying the discourse patterns to inform the invention of remixed protostories for the iDoc prototype. The resulting discourse analysis also addressed the hypothesis that there are topical gaps across the three categories of corpora (i.e., tourism industry, experts, UGC).

5.2 Phase 4 Results: Identifying Discourse Patterns

As the selected datasets were diverse in terms of media and modalities, cross-comparison of the results posed a challenge. Hiippala’s (2015) approach to analysing tourism brochures was grounded in the considerations of medium, genre, and the whole document to provide a structured approach to analysis across multimodal content types. The nine datasets were analysed under these three components and the larger rhetorical context of ethos, pathos, and logos in an effort to understand the genre conventions in each corpus and systemise the cross-comparison of results. The ethos
was used to consider who the content producers are, their desired target audience(s), and their communication goals or reasons for producing the content. The pathos was largely determined by the medium (print or digital) and modalities used, stylistic choices, such as tone of writing and design layout. The logos was considered in terms of the content themes, perspectives included/excluded, and the significance of the UNESCO World Heritage designation. In Codebook 1, the ethos and pathos correspond with the base and layout layers, and the layout and rhetorical layers correspond to logos. In Codebook 2, the additional first impression layer corresponds with the pathos. The data collected was much larger than what is reported in the following sections (see Appendix 4 – Multimodal Discourse Analysis Datasets) and thus, only the most informative elements regarding ethos, pathos and logos for each dataset are discussed in the context of the three corpora. The results of the analysis across the three corpora informed the development of the content model (included at the end of this chapter) for the iDoc protostories by identifying the interests of cultural heritage tourists, common content modalities, and narrative themes.

5.2.1 Travel Industry Results

The travel industry corpus includes three datasets: published travel guidebooks, tourist brochures collected during on-site visits, and the websites for the Australian Convict Sites, which are discussed in that respective order under the rhetorical concepts of ethos, pathos and logos.

5.2.1.1 Ethos: Destination marketing

The ethos of the travel industry analysis focused on the content producers, their targeted audiences, and the rhetorical purposes of their communications.

Travel guidebooks ethos

The guidebook’s brand name is emphasised and serves as the main element of ethos because the editors and writers are not named on the front covers of the selected guidebooks. *Fodor’s Travel Essential Australia* (2018), *Frommer’s Australia* (2019), and *Rough Guides Australia* (2017) provide a higher level of ethos by featuring more details about the writers and the photos help readers “put a face to a name” and provide some approximated context regarding their age, gender, and race. For example, the back pages of *Fodor’s Travel Essential Australia* (2018) includes the seven writers’
profiles, photos, and short biographies that highlight that most are freelance writers and list other venues they have published their travel writing in, which emphasises their diversity. In the back pages of *Frommer’s Australia* (2019), the names and roles of contributors are listed along with a brief description of the single author, Lee Mylne who is an award-winning travel journalist, based in Brisbane Australia. In the back pages, *Rough Guides Australia* (2017) appear the photos and biographies of the eight authors, which emphasise their country of origin and personal interests in addition to their publishing accolades; thus emphasising the person over their writing qualifications. *DK Eyewitness Australia* (2018) only list contributors in the back pages including a consultant who appears at the top of the list, followed by the names of seven main contributors along with only one sentence that vaguely describes their job titles, such as journalist and writer. In the back pages of *Lonely Planet Australia* (2017), four writer biographies, including portrait photos, emphasize their years of contributing to other Lonely Planet guidebooks suggesting that they are staff writers and this is their main source of credibility.

The market differentiation between the guidebooks is low and the target audience is not clearly identified within the published books, nor on the publishers’ websites so supplementary content from magazines and blogs/websites were consulted for additional context (Cahill, 2019; Steves, n.d.; Stoller, 2018) (see Table 9 for an overview of the findings).
Table 9. Overview of Travel Guidebooks’ Audiences and Focus.

<table>
<thead>
<tr>
<th>Travel guidebook published edition</th>
<th>Founded (year)</th>
<th>Country of origin</th>
<th>Front-cover Tagline</th>
<th>Target Audience</th>
<th>Specialisation/focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lonely Planet Australia (2017)</td>
<td>1972</td>
<td>Australia</td>
<td>40th Anniversary Edition Australia</td>
<td>All types of travellers</td>
<td>Encyclopaedic content</td>
</tr>
<tr>
<td>Fodor’s Travel Essential Australia (2018)</td>
<td>1949</td>
<td>United States</td>
<td>Celebrating 80 years</td>
<td>American Baby Boomers</td>
<td>Best city highlights (particularly in Europe)</td>
</tr>
<tr>
<td>Frommer’s Australia (2019)</td>
<td>1957</td>
<td>United States</td>
<td>The Most Trusted Name in Travel</td>
<td>“Upmarket” Americans</td>
<td>Highly opinionated and must-see highlights</td>
</tr>
<tr>
<td>DK Eyewitness Australia (2018)</td>
<td>1974</td>
<td>United Kingdom</td>
<td>The guide that shows you what others only tell you</td>
<td>Cultural tourists</td>
<td>Imagery to inspire travel plans</td>
</tr>
<tr>
<td>Rough Guides Australia (2017)</td>
<td>1982</td>
<td>United Kingdom</td>
<td>Make the Most of Your Time on Earth</td>
<td>Adventurous British tourists</td>
<td>Outdoor activities</td>
</tr>
</tbody>
</table>

In terms of their rhetorical purpose, Lonely Planet guidebooks are published in Australia and present “big picture travel across a whole country for most regions but especially Oceania, Asia and the ‘Shoestring’ range” (Cahill, 2019, para 8-9). The guidebooks are described as are comprehensive and offering low-to-mid budget options (Steves, n.d.). Lonely Planet aims to provide trustworthy travel information with an accessible design that includes images and maps to help readers visualise the destination, they cover increasingly popular destinations and publish many versions to suit every type of traveller, such as long-stays, cross-continental journeys, and local outdoor guides (O’Connell as cited in Stoller, 2018). Although, the audience is widely diverse for Lonely Planet guidebooks, there are different books published for niche travel communities, which recognises the need for more specific recommended experiences for the increasingly stratified travel market.

Fodor’s is the oldest guidebook in this sample and its long history is marketed on the front cover of the book. It focuses on the “best highlights” of the cities it covers, many of which are in Europe and provides encyclopaedic information for Americans (Steves, n.d.). It appeals particularly to the Baby Boomer (post-WWI, approximately

---

87 The Shoestring range of Lonely Planet travel guidebooks refers to shoestring (i.e., low) budget.
1946-1964) and older generations (Cahill, 2019). *Fodor’s* differentiation from competitors is that most of the writers live in the places they cover rather than flying in, the publisher has vetted reviews to ensure they are trustworthy, and businesses cannot pay to be listed in the guides (Stallings as cited in Stoller, 2018). *Frommer’s* guidebooks focus on mainstream travel with an “upmarket touch” for travellers looking for more comfort (Cahill, 2019) and the publisher is colloquially known as the “granddaddy of travel publishing” (Steves, n.d.). *Frommer’s* guidebooks are curated rather than encyclopaedic; they are geared towards Americans (aged 40-70) who take a small amount of vacation per year, so the guides are highly opinionated to advise readers on what to skip and what is worthwhile; and they provide detailed cost information (Frommer as cited in Stoller, 2018). Compared to *Lonely Planet* and *Fodor’s*, *Frommer’s* guidebooks are more selective in their tourism marketing content. However, *Frommer’s* guidebooks evidently compete with *Fodor’s* for similar American audiences and they both market their long publishing history.

*DK Eyewitness*, published in the UK, visually inspires holidays for travellers interested in culture, museums, galleries, and architecture. Their differentiating tactic compared to other guidebooks is to “show” rather than “tell” tourists about destinations as emphasised in their tagline. *Rough Guides*, also published in Britain, are for travellers wanting to step off the beaten track to experience history and adventures like bushwalking and hiking (Cahill, 2019) and it is authored by Europeans who focus more on providing historical information (Steves, n.d.). The targeted audiences for *DK Eyewitness* and *Rough Guides* suggest that travellers from the UK may be more interested in cultural heritage sites and related activities.

Overall, the guidebooks’ main target audiences coincide with the countries of origin that Australia receives in the highest numbers of visitors from, namely Australia, UK and USA as identified in Phase 1 of the theoretical framework. They focus on general interests and “top highlights” and all, except for *Frommer’s Australia* (2019), include content contributed by several writers.

*Tourism brochures ethos*

Previous studies have shown that tourism brochures play an important role in marketing destinations through information and images (Wicks & Schuett, 1991; Molina & Esteban, 2006; Molina, Gomez & Martin-Consuegra, 2010). The brochures were individually produced by the WHS management authorities and a private
company—the Encounter Maria Island ferry operator. The specific audience of the brochures was difficult to identify, but a discrepancy became evident after the coding process was completed (using Codebook 1). The brochures were categorised into on-site visitor guides, intended for on-site visitor use, and marketing brochures which aimed to entice potential visitors. As per the further analysis of the pathos and logos, it became evident that the marketing brochures targeted general tourists and dark tourists.88 The ethos in the tourism brochures is relatively low, but the medium (double-sided printed paper) has limited space and the communicative purpose is to draw visitors to the sites and provide them with an overview of the site. The brochures also include contact information and hyperlinks to the websites (under the contact section) where visitors can retrieve more information, which adds to the credibility of the brief content included.

*Australian Convict Sites' websites ethos*

The historic sites are independently managed by eight different regional governing bodies and Trusts, one by a private family, and one by a foundation. The Port Arthur Historic Site Management Authority (PAHSMA) is responsible for the Port Arthur, Coal Mines and Cascades Female Factory Historic Sites (*Port Arthur Historic Site Management Authority*, 2017). The Fremantle Prison, Kingston and Arthur’s Vale Historic Area (KAVHA), the Old Great North Road, and Darlington Probation Station are managed by regional government ministries/departments (“Fremantle Prison,” 2019; “Kavha,” 2019; “Environment NSW,” 2019; “Parks Tas,” 201989). The Hyde Park Barracks90, Old Government House, and Cockatoo Island91 are managed by Trusts (“Hyde Park,” 2019; “National Trust,” 2019; “Cockatoo Island,” 2019). The Brickendon farm is owned and managed by the Archer family (“Brickendon,” 2019) and Woolmers Estate, formerly owned by the Archer family, has been owned and managed by the Woolmers Foundation Inc. as of 1994 (“Facebook Woolmers Estate,” 2016). Although they are managed separately, the 11 WHS are

---

88 Dark tourism refers to the “act of travel to sites associated with death, suffering, and the seemingly macabre [disturbing]” (Stone, 2006, p. 160).
89 As this corpus focuses on tourism-produced content, the Encounter Maria Island website (2019) was analysed rather than the Parks Tasmania’s web page on Maria Island.
90 The Hyde Park Barracks Museum website was redesigned and updated (noted in April 2020) since the time the analysis was conducted in May 2019.
91 The Cockatoo Island website was redesigned and updated (as of August 2019) since the time the analysis was conducted in May 2019.
collectively monitored by the Australian Convict Sites Steering Committee. The Strategic Management Framework for the 11 WHSs states that the key objectives are to collaboratively manage, conserve, protect, present and interpret the outstanding universal value of the properties and give them functions in community life (Australian Convict Sites, 2018, p. 12). The management authority reports, available on the websites, were reviewed to better understand the vision/goals of the individual sites.

The PAHSMA’s vision statement, which applies to the Port Arthur, Coal Mines, and Cascades Female Factory Historic Sites, is to be “globally recognised for excellence in telling the Australian convict story through outstanding conservation and tourism experiences” (“Port Arthur,” 2019). As per the respective management plans, the Fremantle Prison, Old Great North Road, Old Government House, and Brickendon and Woolmers Estate, similarly aim to communicate the universal heritage values (e.g., through storytelling), managing the impact of visitors, and continuing archaeological and conservation works (Fremantle Prison Heritage, 2018; Old Great North Road, 2005; Old Government House and Domain, 2008; Brickendon, Longford, 2008; Woolmers Estate, 2008). Norfolk Island’s plans focus more on the natural environment and KAVHA’s vision is to “communicate the rich and complex natural and cultural landscape as a vibrant, living place” (KAVHA Draft Interpretation Plan, 2019, p. 6). Maria Island (the location of Darlington Probation Station) and Cockatoo Island’s plans were more industry-focused and did not mention convict heritage. The Maria Island Ecotourism Development Feasibility Study (2014) objectives were to establish a single ferry service operator to the island, position the island as a “must do destination,” create experiences with food and beverage services, upgrade infrastructure, and create additional accommodation options in order to reach a growth target of 30,000 visitors. The vision for Cockatoo Island was to accommodate a broad range of uses and activities aimed at broadening the island’s appeal and viability. They wanted to re-establish maritime and related industry and develop new uses, such as cultural events, studios, workshops for creative industries and visitor accommodation (Cockatoo Island Management Plan, 2017, p. 100). Considering the individual sites have different goals, the targeted audiences and rhetorical communications are not all aligned. In sum, the different sites’ communications foci are conservation and storytelling, natural heritage, industrial history, and visitor experiences focused on accommodation and cultural activities.
5.2.1.2 Pathos: Lack of a common brand

The pathos was examined in terms of the medium (print or digital), content modalities, the design and layout, and the tone of the communications/writing.

Travel guidebooks pathos

The guidebooks were analysed, according to Codebook 1, in terms of the page layout and colour scheme, the amount of space dedicated to Australian convict history and the 11 UNESCO WHS, and the modalities of content used (i.e., text and images) (see Table 10). Overall, the space allocated to the convict sites and related historical contextual content was less than 2% in most guides, but *DK Eyewitness Australia* (2018) and *Frommer’s Australia* (2018) include nearly double the amount of space compared to the other guidebooks. It is unclear why these two guidebooks included more historical text since *DK Eyewitness* aims to visually inspire holidays while *Frommer’s* aims to provide directive advice to help tourists maximize their short vacations. The fact that all guidebooks include less than 5% of the overall space to Australian convict history and the 11 UNESCO WHS is not surprising because it is one topic among many others that may be of interest to their more general audiences.

Examining the interior design layout of the pages allocated to Australian Convict history and the WHS, showed a very simple design with few colours and images in the *Lonely Planet Australia* (2017), *Fodor’s Australia* (2018) and *Frommer’s Australia* (2018) guidebooks. This simple layout makes these guidebooks appear more like encyclopaedic or reference-style texts and it caters to readers who may wish to search for specific information via the table of contents and/or index pages. On the other hand, *DK Eyewitness Australia* (2018) and *Rough Guides Australia* (2017) include more variation with multiple column layout styles and use more colours, which adds visual interest and may encourage more exploration or quick browsing through the texts like a magazine.
Table 10. Summary of Spatial Layout for Australian history and Convict Sites Content

<table>
<thead>
<tr>
<th>Travel Guidebook</th>
<th>Pages/space allocated (%)</th>
<th>Number of content columns</th>
<th>Interior colours</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Lonely Planet Australia (2017)</em></td>
<td>17/1100 = 1.5%</td>
<td>2</td>
<td>Black and blue</td>
</tr>
<tr>
<td>Fodor’s Australia (2017)</td>
<td>13/753 = 1.7%</td>
<td>1</td>
<td>Orange and blue</td>
</tr>
<tr>
<td>Frommer’s Australia (2019)</td>
<td>11/345 = 3.2%</td>
<td>1</td>
<td>Black and white predominately with dark red-coloured headings</td>
</tr>
<tr>
<td>DK Eyewitness Australia (2018)</td>
<td>15/587 = 2.5%</td>
<td>Mix of 1, 2, 3 and jigsaw-like columns</td>
<td>Black font with full-colour images</td>
</tr>
<tr>
<td>Rough Guides Australia (2017)</td>
<td>16/1021 = 1.7%</td>
<td>Mix of 1 and 2</td>
<td>Black text with coloured page-number backgrounds and header borders</td>
</tr>
</tbody>
</table>

The primary modality used in each guidebook, except for *DK Eyewitness Australia (2018)*, was text as evidenced by the amount of textual content compared to images (see Figure 25). *Lonely Planet Australia (2017)* and *Rough Guides Australia (2017)* did not have any photos in the sections/pages analysed. *Frommer’s Australia (2018)* included two images that were only partially related to the topic of the text and each image was less than half a page in size, making their inclusion gratuitous or supplementary. On the other hand, *Fodor’s Australia (2018)* imagery did reference the textual content and thus, added rhetorical meaning/value. *DK Eyewitness Australia (2018)* used imagery as the primary mode of communication as there were fewer paragraphs of text and the size of the images dominated the page layout. *DK Eyewitness Australia (2018)*, while it included the most images, it also included the most diverse types of imagery, such as historical paintings, illustrations and artwork (see Figure 26). The diversity of the images helps communicate via showing the history through paintings and artworks and the use of diagrams and maps also provides more context to the physical space being featured.
The other aspects of the guidebooks analysed in terms of pathos were the tone and style of the writing. *DK Eyewitness Australia* (2018) and *Lonely Planet Australia* (2017) had a more factual and neutral tone compared to the other guidebooks. The tone in *DK Eyewitness Australia* (2018) is fact-based, detailed and succinctly summarises the main historical events, for example: “On January 26, 1788, the First Fleet including two men-of-war and nine transport ships arrive in Sydney Cove with 750 convicts, 210 marines and 40 women and children” (p. 54). The writing in *Lonely Planet Australia* (2017) provides more context on the wider significance of the convict sites.
to Australian history, for example, the Old Government House “dates from 1799, making it the oldest remaining public building in Australia” (p. 100). Taking a more subjective approach, *Frommer’s Australia* (2018) and *Fodor’s Australia* (2018) involve more opinions and interpretations from the individual writers. The tone in *Frommer’s Australia* (2018) is more directive and persuasive. For example, a dismissive passage for the Cascades Female Factory reads: “unless you are really into convict history, you may wish to save yourself for Port Arthur. All that is left here are the stone walls of this prison and a memorial garden” (p. 302). The tone in *Fodor’s Australia* (2018) is more interpretative and uses quotations from primary sources (e.g., Captain Phillip’s diary), references to popular novels (e.g., Marcu Clarke’s *For the Term of His Natural Life*), and the socio-cultural impact of convictism on Australians. For example: "the destruction of the Aboriginal population, who are thought to have crossed into Tasmania approximately 36,000 years ago, is a dark stain on the island's memory" (p. 330). Comparatively across all guidebooks, *Rough Guides Australia* (2019) had the most distinctive style including more descriptive adjectives and using a storytelling-style with expressive details, but also some contestable historical accounts. For example, the guide incorrectly states that Luis Vaes de Torres is from Portugal, but he was of Spanish origin and under the Port Arthur site, the interpretation that being transported “represented a fresh start; an escape from slums for the industrial revolution or rural famine, with accommodation, regular meals and the first opportunity to learn a trade” (p. 915). Therefore, while each guidebook covers similar topics, the strongest pathos was exhibited in *DK Eyewitness Australia* (2018) because it had a dynamic layout and used different types of imagery and secondarily *Fodor’s Australia* (2018) because its use of a variety of sources (e.g., photos, primary sources, etc.) added rhetorical/persuasive value.

Tourism brochures pathos

Unlike the guidebooks, which are produced by different corporations, the brochures produced by PAHSMA showed similar formats and branding (see Image 8). This dataset revealed three main brochure formats that were based on paper sizes ranging from A2 (largest) to A4 (smallest). The three largest brochures, on A2-sized paper, were the “visitor guides” intended for on-site use at the Cascades Female Factory, Port Arthur, and Brickendon. The second set, on A4-sized paper, were commonly branded marketing brochures produced by PAHSMA for Port Arthur,
Cascades Female Factory, and the Coal Mines. The brochures created by the other WHS management authorities were smaller. For example, Cockatoo Island and Maria Island only had leaflets—defined in this thesis as non-folded single-sided documents printed on A4-sized paper. The Old Government House had two brochures on A4-sized paper, one glossy and non-glossy. Overall, the majority of the collected brochures were larger on average and had 8-12 panels of content on an A2-size paper rather than the more standard six panels on a double-sided A4 as found in Hiippala’s (2014) study of tourism brochures.

Image 8. Australian Convict Sites Brochures’ Colour Branding

Drawing from Hiippala’s (2015) “area model” analysis of tourism brochures, the ratio of images to text was examined by general proportions (e.g., ¼, ⅓, ½ or a full-page image) rather than precise measurements. The general percentage of image coverage was determined by summing the image proportions of the inside and outside of the brochure and dividing by two. Two brochures used less than 33-38% of space for images, four used approximately 42% of space for images, and three used more than 50% of space for images. These results suggest that images contribute a significant portion of information about the sites, but that text is the more prominent

---

92 Precise measurements would not add additional value to this analysis because the primary purpose was to perform a distant reading of each dataset in terms of modality use and content themes.
or at least of equal importance as a communication modality. The PAHSMA visitor
guides used brighter imagery on the front and provided more historical content, while
the PAHSMA marketing brochures were mostly black and red on the cover panels,
which follows a dark tourism aesthetic based on the qualities identified by Krisjanous
(2016). The other non-PAHSMA brochures and leaflets used more white space along
with different hues of blue as a secondary colour.

Overall, many brochures and leaflets used imagery in the background and to
visually frame the content, especially in the tourism marketing brochures that feature
a number of historical artefacts. The types of images included across the eight
brochures are modern photos (50 occurrences) which were the most common type of
imagery, historical photos (20), illustrations/paintings/art (11), blueprints (4) and maps
(8). The Port Arthur Historic Site marketing brochure used all types of imagery while
both the Cascades visitor guide and marketing brochure used a balance of modern and
historical photos. As for other modalities (see Figure 27), nearly all brochures (8 out
of 10) included a map of the site’s location except for the Cascades visitor guide and
the Old Government House leaflet. On the other hand, Cockatoo Island’s leaflet was,
in essence, a labelled map along with a legend. Blueprints were used in four brochures
to show the original structure of buildings on the sites since many of the buildings no
longer exist or are in ruins. Overall, the tourism brochures as a total sample used more
diverse modalities compared to the travel guidebooks even though both are printed
media. This could be a result of Site Management Authorities having easier access to
historic photos, artwork and maps or that they place more rhetorical communicative
value in them. The tone of the writing in the brochures was objective and mostly
written in third-person, providing some distance from history. The textual content was
brief and informative and did not contribute much to the pathos.
As per the first impression layer of Codebook 2, the Australian Convict Sites’ websites were categorised from dark to light in respect to the first visual impression, taglines or image captions appearing on the homepage. As a baseline of qualities making up a dark versus a light website, Krisjanous (2016) found that more serious (i.e., dark) websites used solid, sharp, and formal black-coloured font, landscape/building photography with no people, muted colours and sepia tones to signify distance from the present, and more empty space between text or imagery. On the other hand, she found that less serious (i.e., lighter) websites used rounded and colourful fonts, more social photos of tour groups for example, and a more cluttered layout connoting playfulness or informality (Krisjanous, 2016, p. 348). Thus, Krisjanous’ (2016) study provided tangible units for Codebook 2 to ground the first-impression of the presence of dark tourism elements in the website designs. In the study of the Australian Convict Sites’ website, a medium-level of dark tourism aesthetic was assigned to websites that had a balance of these light and dark units (see Table 11).
Table 11. Level of Visual Dark Tourism in the 12 UNESCO WHS Websites

<table>
<thead>
<tr>
<th>Website</th>
<th>Tagline/captions</th>
<th>First Visual Impression (Dark -&gt; Light)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fremantle Prison</td>
<td>Multiple photo caption taglines: <em>Explore the darker side of history. Get inside the criminal mind. Descend into the depths below. Step inside and do time. Welcoming visitors since 1850.</em></td>
<td>Dark</td>
</tr>
<tr>
<td>Cockatoo Island</td>
<td>--</td>
<td>Dark</td>
</tr>
<tr>
<td>Hyde Park Barracks</td>
<td><em>The World Heritage-listed Hyde Park Barracks is currently closed for a major renewal...</em></td>
<td>Moderate</td>
</tr>
<tr>
<td>Coal Mines</td>
<td><em>Punishment for the ‘worst class’ of convicts</em></td>
<td>Moderate</td>
</tr>
<tr>
<td>Port Arthur</td>
<td><em>A machine to grind rogues honest</em></td>
<td>Moderate</td>
</tr>
<tr>
<td>Cascades Female Factory</td>
<td><em>Discover the stories of Australia’s female convicts</em></td>
<td>Light</td>
</tr>
<tr>
<td>Brickendon</td>
<td><em>World Heritage Listed Colonial Farm Village &amp; Accommodation, Longford, Tasmania</em></td>
<td>Light</td>
</tr>
<tr>
<td>Woolmers</td>
<td><em>New Website. We are developing an exciting website, due to launch soon</em></td>
<td>Light</td>
</tr>
<tr>
<td>Maria Island - Darlington</td>
<td><em>Official Ferry Operator</em></td>
<td>Light</td>
</tr>
<tr>
<td>Old Government House</td>
<td>--</td>
<td>Light</td>
</tr>
<tr>
<td>Kingston &amp; Arthur’s Vale Historic Area (KAVHA)</td>
<td><em>Norfolk Island</em></td>
<td>Light</td>
</tr>
<tr>
<td>Old North Road</td>
<td><em>The Old Great North Road is one of the best surviving examples of our convict heritage. The World-Heritage-listed section of the road occurs within Dharug National Park.</em></td>
<td>Light</td>
</tr>
</tbody>
</table>

On the darker scale of the first visual impression, both Fremantle Prison and Cockatoo Island websites used black as a predominant background colour and the font is solid, sharp and in white serving as a stark contrast to the dark background (see Image 9 and Image 10). On a moderate level of dark tourism, the Hyde Park Barracks Museum, Coal Mines, and Port Arthur all have video clips in the background that show a balance of dark and light aesthetics in the landscape and buildings shots (see Images 11-13). For example, Hyde Park’s video has a black overlay, was filmed on a cloudy day, and ends with a view of the black gates. On the lighter scale, Cascades Female

---

93 Since these datasets were analysed (May 2019), the Cockatoo Island website was redesigned.
Factory, Brickendon and Woolmers Estate, Encounter Maria, Old Government House, KAVHA, and Old Great North Road include photography on bright sunny days (see Images 14-20). For example, the Brickendon and Woolmers Estate websites use sepia tones, but the reddish-brown rust colour, photography of the sunny gardens, and coloured fonts provide a warmer first impression (see Image 15 and Image 16). The KAVHA and the Old Great North Road websites use lots of white space, green colour, and rounded fonts which gives the lightest first impression compared to the other websites (see Image 19 and Image 20). The websites show that the primary target audience is not dark tourists since the majority present a light first impression (58%), but some sites do incorporate a darker aesthetic. As was noted in the analysis of the tourism brochures, common visual branding and layout can also be seen in the PAHSMA websites (Porth Arthur, Coal Mines, and the Cascades Female Factory) and an overall lighter aesthetic in the other Australian Convict Sites’ website design. For example, the PAHSMA websites all have a broad-arrow icon and a specific logo for each historic site in the top left-hand corner, a similar aerial video background with white block-letters for overlay titles, and an Instagram photo feed on the page footer. The screenshots (Images 9-20) show that black and sepia colours appear across multiple websites but are not used in a consistent manner.


Image 10. Cockatoo Island - Dark (Screenshot May 28, 2019)

Image 11. Hyde Park Barracks Museum – Moderate (Screenshot May 28, 2019)

Image 12. Coal Mines - Moderate (Screenshot May 28, 2019)
Across the websites, the primary modality of communication was text and the Australian Convict Sites with more tourism infrastructure had respectively more text. The quantity of content on each website was examined in terms of the number of web
pages, words, and the image-to-text ratio (see Table 12). Half of the WHS websites have a substantial amount of content between 18,000 - 138,500 words with Fremantle Prison, Hyde Park Barracks, and Port Arthur being the largest both in terms of the number of web pages and total word counts exceeding 100,000, which is more than double many of the other websites.

Table 12. Quantitative Summaries of 11 UNESCO Australian Convict WHS Websites

<table>
<thead>
<tr>
<th>Website</th>
<th>Number of web pages</th>
<th>Total words</th>
<th>Number of images vs. number of web pages (ratio &amp; average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fremantle Prison (fremantleprison.com)</td>
<td>213</td>
<td>138,695</td>
<td>194:213 = 0.9</td>
</tr>
<tr>
<td>Hyde Park Barracks (sydneylivingmuseums.com.au)</td>
<td>155</td>
<td>133,011</td>
<td>253:155 = 1.6</td>
</tr>
<tr>
<td>Cockatoo Island (cockatooisland.gov.au)</td>
<td>76</td>
<td>52,467</td>
<td>204:76 = 2.7</td>
</tr>
<tr>
<td>Port Arthur (portarthur.org.au)</td>
<td>42</td>
<td>100,735</td>
<td>47:42 = 1.1</td>
</tr>
<tr>
<td>Brickendon (brickendon.com.au)</td>
<td>32</td>
<td>18,036</td>
<td>131:32 = 4.1</td>
</tr>
<tr>
<td>Cascades (femalefactory.org.au)</td>
<td>26</td>
<td>45,427</td>
<td>21:26 = 0.8</td>
</tr>
<tr>
<td>Kingston &amp; Arthur’s Vale (kavha.gov.au)</td>
<td>23</td>
<td>9,392</td>
<td>30:23 = 1.3</td>
</tr>
<tr>
<td>Coal Mines (coalmines.org.au)</td>
<td>13</td>
<td>18,478</td>
<td>11:13 = 0.8</td>
</tr>
<tr>
<td>Maria Island - Darlington (encountermaria.com.au)</td>
<td>14</td>
<td>6,308</td>
<td>34:14 = 2.4</td>
</tr>
<tr>
<td>Woolmers (woolmers.com.au)</td>
<td>9</td>
<td>2,397</td>
<td>21:9 = 2.3</td>
</tr>
<tr>
<td>Old Government House (nationaltrust.org.au/places/old-government-house)</td>
<td>8</td>
<td>6,634</td>
<td>8:8 = 1</td>
</tr>
<tr>
<td>Old North Road (environment.nsw.gov.au/topics/parks-reserves-and-protected-areas/types-of-protected-areas/world-heritage-listed-areas/australian-convict-sites-old-great-north-road)</td>
<td>1</td>
<td>1,987</td>
<td>13:1 = 13</td>
</tr>
</tbody>
</table>

In terms of the modalities used in the website design (see Figure 28), the results showed that modern photography is the most popular modality among WHS websites. Based on the number of total images to the total number of web pages, the websites with the highest ratio of imagery to the number of pages is Cockatoo Island (2.7 images per web page), and the lowest are the Cascades Female Factory and Coal Mines websites (0.8 images per web page). Modern photography (i.e., photos taken with a digital camera) was more common than historical photography (e.g., scanned images of archived photos taken with a film camera). Overall, Hyde Park Barracks website
used the widest variety of multimodal content compared to the other websites. For example, it included many illustrations/paintings/artworks; embedded videos (hosted on YouTube) which explain a variety of historical trades such as shoemaking, coopering, and food preparation; and audio files hosted on Soundcloud (a music hosting/streaming website) which recounted historical anecdotes/narratives, poetry and religious practice. Hyde Park Barracks is the only historic site that is also simultaneously a museum and the use of multimodal content speaks to the trend, as discussed in Chapter 2, that museums are increasingly investing in digital and multimodal content creation. Furthermore, Hyde Park Barracks was closed for the majority of 2019 to undergo a large renewal project to enhance the on-site visitor experience, which is reported to include a “new multimedia immersive experience” (Power, 2019). In terms of the other modalities, similar to the travel guidebooks, only half of the WHS websites included a map. Rather than a map, Cascades Female Factory provided a digitally illustrated blueprint (i.e., coded as a diagram) of the factory’s yards.

**Figure 28. Overview of Modalities Included in Australian Convict Sites’ Websites**

The tone of the web content appeared in three main styles: third-person objective, third-person subjective, and a mix of first- and second-person. The most common approach (used by seven of the 12 websites) was content written in third-person that recounted historical events, facts and information for visitors. For example, “Fremantle Prison was built as a convict barracks in the nineteenth century and
remained in continual use until 1991” (fremantleprison.com.au, 2019). Another approach was text written in a third-person point of view with the inclusion of some historical interpretation or additional context-setting as seen on the Port Arthur, Hyde Park, and Old Government House websites. For example, “over its long history, Port Arthur has been a place of hardship and punishment, a place of opportunity, and a place of leisure. Now it is one of Australia’s most important heritage destinations” (portarthur.org.au/history, 2019). A final writing style employed in the websites was a combination of both first- and second-person, which provided a lighter tone as seen on the Cockatoo Island and Encounter Maria Island websites. For example, Maria Island’s homepage reads, “there are no shops or fancy hotels, and limited places to charge your precious devices. So come prepared. Maybe even turn your phone off – gasp!” (encountermaria.com.au, 2019). The pathos communicated across the websites in terms of first impression and tone of the writing is mixed. It conveys some of the dark nature of the history and concurrently welcomes tourists to visit the sites.

5.2.1.2 Logos: Heritage values

The logos focused on identifying the common topics/themes, perspectives included, and mentions of UNESCO designation and site conservation.

Travel guidebooks logos

The main topics analysed in the guidebooks were coded according to the noted dates (i.e., years), names of people (i.e., colonial administrators, convicts), perspectives in terms of identifiable groups (e.g., English, Irish, Aboriginals), and inclusion of UNESCO status. Looking at the historical context, four of the five guidebooks dedicated more than 60% of the selected content to the general Australian history with the remaining analysed content covering the individual WHS (see Figure 29). In contrast, Lonely Planet Australia (2017) focused more text on the individual WHS (64%) rather than contextual history.
In terms of perspectives covered, *Fodor’s Australia* (2018) was the least inclusive of diverse perspectives as it focuses only on the perspective of British influence and history. *DK Eyewitness Australia* (2018) and *Lonely Planet Australia* (2017) included two perspectives, namely British history and the presence of Aboriginals in Australia prior to colonisation. *Frommer’s Australia* (2019) includes four perspectives: the Portuguese, Dutch, British settlement, and the “extinguishing of Aborigines” in Tasmania. *Rough Guides Australia* (2017) was the most inclusive of the different groups involved in the discovery and settlement of Australia including Aboriginal prehistory; the founding of Australia by Portuguese and Dutch explorers; the Spanish landing; the British arrival, claim and penal colonisation of Australia; the American War of Independence sparking the need for a new destination for convict transportation; as well as the free British and Irish immigrants (non-convicts). Across the dataset, the guidebooks tended to focus on the British settlements and displacement of many Aboriginal populations.

UNESCO designation is a world-recognised brand and may serve as a marketing tactic for the Australian Convict Sites. Although they were designated as a group of 11 UNESCO World Heritage Sites in 2010, the analysed editions of the Australian travel guidebooks published between 2017-2019 do not mention the UNESCO status.

---

94 The use of the “Aborgines” by *Frommer’s* is politically incorrect and again exemplifies a reduction in the guidebook’s ethos in terms of credibility and cultural sensitivity.
for each site\textsuperscript{95} (see Table 13). The rationale behind including or excluding the UNESCO status is unclear from the texts analysed and this presents a gap, intentional or unintentional, in communicating the cultural heritage and world significance of the sites.\textsuperscript{96} It could be that either the writers and editors of the guidebooks were unaware of the UNESCO status of the Convict Sites at the time of publication or they perhaps deemed the UNESCO brand as not adding value to the marketing of the sites as tourist destinations. *Lonely Planet Australia* (2017) was the most inclusive with 10 of the 11 WHS compared to the other guidebooks and supports the idea that the writers/editors of the guidebook, which is published in Australia, would be more likely aware of the Convict Sites’ UNESCO status. Furthermore, *Rough Guides*, which targets tourists who are willing to travel farther off “the beaten track,” included the more remote sites of Brickendon, Darlington, and the Coal Mines. The most-frequently included across the guidebooks were Port Arthur Historic Site and Hyde Park Barracks, and Fremantle Prison. These three Australian Convict Sites have the most tourism infrastructure, such as museums or visitor centres, informational brochures, and guided tours. The less accessible Old Great North Road and Kingston and Arthur’s Vale on Norfolk Island may have been excluded in all guidebooks due to fewer transportation options and tourism infrastructure. Notably, Cockatoo Island was excluded from all guides except for *Lonely Planet Australia* (2017) even though it is accessible from Sydney via regular ferry service.

\textsuperscript{95} The WHSs were coded for each of the 12 locations because Brickendon and Woolmers are often treated as two sites even though they are designated as a single UNESCO Site.

\textsuperscript{96} This finding poses a question for future researchers on how marketing UNESCO WHSs impacts visitor behaviour.
Table 13. UNESCO World Heritage Australia Convict Sites in Travel Guidebooks

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyde Park</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Port Arthur</td>
<td>X*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fremantle Prison</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Old Government House</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Woolmers</td>
<td>X*</td>
<td>X*</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Cascades</td>
<td>X*</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Brickendon</td>
<td>X*</td>
<td>X*</td>
<td>X*</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Darlington (Maria Island)</td>
<td>X*</td>
<td>X*</td>
<td>X*</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Coal Mines</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Cockatoo</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X*</td>
<td>X*</td>
</tr>
<tr>
<td>Old North Road</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kingston and Arthur’s Vale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Included UNESCO designation in the text description.

Tourism brochures logos

The topics covered in the brochures were coded according to the text headings and then grouped into six themes: (1) history and heritage, (2) contact and directional information, (3) visitor experience, (4) external references (e.g., databases and other convict sites), (5) buildings, and (6) other (e.g., educational programs and instructions for visitors). Across all brochures in this sample, the inside content panels focused on the tours and history while the outside panels had practical and contact information. The topic with the most headings was buildings (tangible or constructed), followed closely by history and heritage, and visitor experience topics (e.g., tours, accessibility and opening hours). The visitor guides included more historical content, while the marketing-focused brochures contained more information on tours and ticket prices. Referring to the rhetorical layer of Codebook 2, less than half of the brochures provided an overview of the full history of the site up to more modern-day usage as the chronology of the brochures begins with key dates between 1799-1839 pertaining to the establishment of each respective Convict Site. Colonial prehistory was only mentioned in the Port Arthur visitor guide and the Old Government House leaflet. The selective history presented may be due to the limited space allotted in a printed
brochure and the more specific focus on the site. The PASHMA visitor guides also included text captions for the photos, which were connected to the main text. Thus, the imagery included in the PASHMA brochures was done more purposefully rather than being gratuitously added for visual interest as they often were in the marketing-focused brochures.

Seven out of 10 brochures included the names of specific convicts and landowners and provided a sentence or two about their personal history. The inclusion of notable people added more storytelling to the site and provided additional context about what the convicts were sentenced for. Overall, the Brickendon and Cascades visitor guides were more storytelling-oriented as both of these brochures included the highest number of people (convicts, landowners, etc.). For example, the Brickendon brochure had the tagline “a convict story” and mentioned over 20 people and the Cascades Female Factory brochure mentioned 13, while other brochures did not include any convict stories or mentioned up to four people. In regard to the perspectives included, only two brochures noted Aboriginal presence prior to the penal settlements: the Port Arthur visitor guide mentions the Pydairrerme people, and the Old Government House educational leaflet mentions the Darug (i.e., Dharug) land upon which it stands—the previous home to the Burramatta people. The convicts mentioned were of Irish, English, Scottish and Welsh origin.

Seven brochures included the UNESCO logo and heritage listing, but the Old Government House leaflet and Cockatoo Island leaflet and brochure did not. Instead of UNESCO, the Old Government House emphasised the National Heritage Trust’s brand (i.e., the management authority), and Cockatoo Island focused more on its industrial history and present-day site usage than the convict history. The unit of analysis “calls to action” in the rhetorical later of the codebook was used as a measure of persuasion to encourage readers to participate. Only the Maria Island leaflet included a call to action, which was to respect the heritage sites and conservation measures by asking visitors to keep their distance from and not feed the wombats. This presents a possible gap, or missed opportunity, across the other brochures for communicating the importance of UNESCO WHS conservation efforts to tourists considering the brochures may be their first point of information about the sites.
The websites’ logos, being a case of procedural rhetoric, involves user action and digital media should allow for more content to be included than print media (e.g., the encyclopaedic affordance). Website navigation layer of Codebook 2 was coded based on the units of menu style,97 page depth98 (i.e., the levels of hierarchical pages in the site map), and presence or absence of search functionality. The menu style can aid or hinder user navigation and thus, impact their experience. Half of the websites (Woolmers; Encounter Maria Island; Coal Mines; Brickendon; Cockatoo Island; KAVHA) included a primary menu at the top of the homepage with the main content categories and a secondary menu (except Woolmers) at the bottom of the homepage, which commonly had sitemaps and/or privacy and copyright links. The other six websites (Port Arthur; Fremantle Prison; Cascades Female Factory; Hyde Park Barracks; Old Government House; Old North Road) provided many possible entry points into the website through multiple menus on the homepage. For example, the Hyde Park Barracks website had a primary hamburger99 menu in the top right-hand corner of the homepage that navigates to all the Sydney Living Museum subsections of the website, a main menu for the specific section on Hyde Park Barracks, and two menus in the footer. The larger websites with higher word counts had deeper sitemaps, up to four levels, and a search functionality to allow users to find specific information (e.g., Fremantle Prison; Hyde Park); thus, the more content the website contains, the more possible menu and navigation options are provided (see Table 14). Across the sample, the websites commonly provide two to three menus, suggesting that the websites’ visitors may search for many different types of information and/or the menus present a method of organising similar topics. This indicates that the iDoc prototype should include at least two to three navigation options of grouped topics and a search function. The provision of historical context was quantified in terms of how many web pages were included under the “history” section of each website. Hyde Park Barracks dedicated the most space proportionally (77%) to historical content (see Figure 30). On the other end of the spectrum, the Old Government House did not include any

---

97 A menu was defined and coded based on the presence of a list of options grouped together either horizontally or vertically.
98 A page level was coded when clicking a hyperlink opened a new page.
99 A hamburger button is colloquial term to describe the menu icon commonly appearing in web interfaces on mobile devices and is used as a method to hide long text lists of options to maximise screen space for the current content being displayed.
designated pages or content on the convict history related to the house and surrounding Parramatta Park. The most-frequent words unique to each WHS, as per the results in Voyant Tools’ Summary Tool, were further examined using other tools (e.g., Topics, Correlations, etc.) and then grouped into higher-level themes to provide the context needed to inform the invention of the iDoc protostories (see Table 15).

Table 14. WHS Websites’ Sitemap Depth

<table>
<thead>
<tr>
<th>Website</th>
<th>Number of menus</th>
<th>Site map page depth</th>
<th>Search function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fremantle Prison</td>
<td>2</td>
<td>4</td>
<td>Present</td>
</tr>
<tr>
<td>Hyde Park Barracks</td>
<td>4</td>
<td>4</td>
<td>Present</td>
</tr>
<tr>
<td>Cockatoo Island</td>
<td>2</td>
<td>3</td>
<td>Present</td>
</tr>
<tr>
<td>Port Arthur</td>
<td>3</td>
<td>3</td>
<td>Present</td>
</tr>
<tr>
<td>Cascades</td>
<td>3</td>
<td>3</td>
<td>Present</td>
</tr>
<tr>
<td>Brickendon</td>
<td>2</td>
<td>2</td>
<td>Absent</td>
</tr>
<tr>
<td>Kingston &amp; Arthur’s Vale</td>
<td>2</td>
<td>2</td>
<td>Present</td>
</tr>
<tr>
<td>Coal Mines</td>
<td>2</td>
<td>2</td>
<td>Present</td>
</tr>
<tr>
<td>Maria Island - Darlington</td>
<td>2</td>
<td>2</td>
<td>Absent</td>
</tr>
<tr>
<td>Woolmers</td>
<td>1</td>
<td>2</td>
<td>Absent</td>
</tr>
<tr>
<td>Old Government House</td>
<td>4</td>
<td>1</td>
<td>Present</td>
</tr>
<tr>
<td>Old North Road</td>
<td>8</td>
<td>1</td>
<td>Present</td>
</tr>
</tbody>
</table>

Figure 30. Proportion of Historical Content on WHS Websites
Table 15. Official Convict Sites’ Website Content Themes

<table>
<thead>
<tr>
<th>Website</th>
<th>Most frequent unique words (number of occurrences)</th>
<th>Discourse topics and (associated theme number)</th>
<th>Associated Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fremantle Prison</td>
<td>Convict (3722); tour (1177); adult (980)</td>
<td>(4) Convict history and tunnel tours (4) Gifts and souvenirs (1) Students, public and corporate visitors</td>
<td>(1) Modern-day site usage</td>
</tr>
<tr>
<td>Hyde Park Barracks</td>
<td>Sydney (1208); museum (891)</td>
<td>(1) Education living heritage museum (4) Convict and aboriginal history</td>
<td>(2) Natural environment</td>
</tr>
<tr>
<td>Cockatoo Island</td>
<td>Trust (424); camping (402)</td>
<td>(1) Campground (1) Social spaces and dining/cafe/alcohol; (1) World heritage, schools/learning</td>
<td>(3) Site conservation</td>
</tr>
<tr>
<td>Port Arthur</td>
<td>Historic (682); australianconvictsites (378)</td>
<td>(4) Discover Hobart and beyond (3) World heritage sites (4) Visitor tours; restaurant and dining</td>
<td>(4) Convict history and tourism</td>
</tr>
<tr>
<td>Cascades</td>
<td>Female (648); site (513); historic (389)</td>
<td>(3) Heritage management and conservation (4) Female convict history</td>
<td></td>
</tr>
<tr>
<td>Brickendon</td>
<td>Farm (362); heritage (249); cottages (187); history (156)</td>
<td>(1) Weddings/parties (4) Archer and convict transportation (1 &amp; 2) Rustic garden holiday</td>
<td></td>
</tr>
<tr>
<td>Kingston &amp; Arthur’s Vale (KAVHA)</td>
<td>Settlement (120); island (119)</td>
<td>(4) Colonial settlement history (2) Beautiful island</td>
<td></td>
</tr>
<tr>
<td>Coal Mines</td>
<td>Historic (295); ruins (150)</td>
<td>(4) Worst penal punishment (2 &amp; 3) Beautifully quiet ruins</td>
<td></td>
</tr>
<tr>
<td>Maria Island - Darlington</td>
<td>Information (61); encounter (57); ferry (53)</td>
<td>(4) Ferry service (1 &amp; 2) Discover the island and accommodation</td>
<td></td>
</tr>
<tr>
<td>Woolmers</td>
<td>Tours (22); website (19); accommodation (18)</td>
<td>(4) Daily guided tours (4 &amp; 2) Archer family history and land/garden (4) Accommodations on farm</td>
<td></td>
</tr>
<tr>
<td>Old Government House</td>
<td>Heritage (234); publications (87); tours (85)</td>
<td>(1) Venue hire for education/programs and weddings (4) Heritage tours (1 &amp; 3) Community-related content (publications, memberships, volunteer, and foundations)</td>
<td></td>
</tr>
<tr>
<td>Old North Road</td>
<td>Heritage (25); convict (19)</td>
<td>(2 &amp; 3) Park and conservation management (animals, water, land) (4) Convict heritage</td>
<td></td>
</tr>
</tbody>
</table>
Interpreting the results from the website content analysis revealed four common themes: (1) modern-day site usage, (2) natural environment, (3) site conservation, and (4) convict history and tourism (see Table 15). Firstly, the theme of the modern-day usage of the historic sites emerged most prominently in three websites (Brickendon; Cockatoo; Old Government House) because they market the historic sites as venues available for events, such as educational tours, corporate events, and weddings. For example, the Cockatoo Island website’s “frequently asked questions” section focused on staying, eating, and drinking on the island and venue hire options. Similarly, most of the Old Government House’s content was about venue hire and educational programming for primary school-aged children with the overall rhetoric speaking to community-focused activities. The second theme that emerged from the websites was the beauty of the natural environment. For example, Woolmers’ website included photo galleries of the Estate with the overall rhetoric speaking to the daily guided tours of the land/gardens; the KAVHA website provided information for self-guided exploration of the area; and the Coal Mines website centred on the remote location being a beautiful, quiet coastland for visitors. The third theme on conservation of the historic sites appeared on the Old North Road, Port Arthur and Cascades websites. For example, the Old Great North Road website\textsuperscript{100} focused on its heritage status and conservation measures within the national parks. The fourth theme on convict history and tourism was demonstrated in the Fremantle Prison, Port Arthur, and Hyde Park websites. For example, the Fremantle Prison website focused on tourism as a large portion of content was on the sale of souvenirs (e.g., clothing), tours, the stories of people and escapes (e.g., Moondyne Joe and The Fenians), and school tours. The Fremantle Prison and Port Arthur websites also featured “Book/tickets/tours” links prominently on the homepage.

In terms of the variety of perspectives included across the 12 websites, the female convicts are well represented, there is content on Irish convict history, mentions of the colonial settlement, and the previous presence of Aboriginals in Australia. For example, the Old North Road web page specifically mentions the Dharug Aboriginals as the National Park also carries the same name. A noticeable gap is the lack of wider connections between the Australia Convict Sites and macro-narrative of heritage.

\textsuperscript{100} As the Old Great North Road is a single web page and thus, distant reading was supplemented with a close reading.
Although some websites include external hyperlinks to other convict sites (i.e., PASHMA), there is a lack of consistency in the visual aesthetic and rhetoric, which leaves the users with siloed information on each WHS.

Most websites (9 out of 12) included the UNESCO World Heritage logo on the homepage. The websites that did not were, Cockatoo Island, the Old Government House, and Maria Island, which instead noted that they were world heritage listed. The Port Arthur, Cascades Female Factory, Coal Mines, and Old Great North Road websites went a step further and dedicated a section to conservation policies and plans. The Coal Mines Site even included a specific call to action for visitors not to disturb the building remains and, similarly, Maria Island featured a “pledge” asking visitors to respect the natural environment including wildlife. The Hyde Park Barracks Museum website included news pages with updates regarding archaeological and conservation works. The cross-comparison highlighted a noticeable gap on the Brickendon and Woolmers Estates, Cockatoo Island, and the Old Government House websites which did not allocate a designated space for information about their conservation management plans. Although the UNESCO WHS are collectively monitored by the Australian Convict Sites Steering Committee, each site evidently promotes different levels of awareness to the public through the website. This suggests that some sites may be at greater risk conservation-wise than others and poses an informational gap and a disconnect between the individual site management authorities.

5.2.1.3 Discussion of tourism industry corpus findings

The ethos across these three datasets shows that tourism-produced content targets a general audience with some focus towards the USA and UK. The tourism industry relies more on brand recognition than on the authority of specific writers or editors. The information is primarily created for providing pre-visit or on-site visitor information to highlight the features of the locations. The additional information about the content producers (ethos) was difficult to acquire; it was included in external sources (e.g., blogs and magazines), the fine print, and management reports. Therefore, the assumption is that tourists have prior brand awareness either based on their own experience or word-of-mouth recommendations. The print medium also serves as evidence of gatekeeping and a certain level of trust that the content has been vetted and verified. However, the guidebooks often include a caveat in the first few pages
that they do not take responsibility for incorrect information as it was accurate at the time of publication, to their knowledge. As the analysis showed, some guidebooks do include incorrect or incomplete information. In terms of pathos, the tourism industry corpus highlighted a dark tourism aesthetic in some of the marketing brochures and website designs; text is the primary modality of communication; and the Australian Convict Sites as a collective group do not have a common visual brand identity, attributable to the fact that the sites have individual management authorities.

In regard to the logos in this corpus, the datasets provided a wide breadth of surface-level history, giving a brief overview of dates, and they focused on available tourism amenities for the WHS. The guidebooks highlighted the history of Australia’s founding and settlement, developments in infrastructure, but omitted the less accessible world heritage sites that have less tourism infrastructure. Similarly, the printed tourism brochures focused on visitor experiences (e.g., tours), buildings/infrastructure, and educational programs. The analysis also uncovered that the websites included information on modern-day usage of the Australian Convict Sites as well as concerns for the natural environment and site conservation. On average, UNESCO WHS designation was included in 68% of the corpus. Therefore, key findings from the tourism corpus that contribute to the iDoc protostory invention were: that there is a medium-level of dark tourism aesthetic and that tourists are interested in key dates and statistics (e.g., number of convicts transported, dates buildings were constructed) and the visitor experiences especially guided tours.

5.2.2 User-generated Content Results

5.2.2.1 Ethos: Alternative authorities

TripAdvisor reviews ethos

TripAdvisor is a website offering travel advice to users, which is based “not on the musings of a handful of professional travel writers or paid assessors, but rather of the experiences of millions of everyday tourists” (Jeacle, & Carter, 2011, p. 298). Previous research on electronic word of mouth marketing shows that there is a high degree of trust and value placed in customer reviews rather than professional experts (Gretzel, 2007; Schmallegger & Carson, 2008; Ye et al., 2011; Chen & Thadani, 2012). However, since TripAdvisor reviews are user-generated content (UGC), their credibility comes into question. For example, each visitor to the Australian Convict
Sites does not write a review about their experience. Furthermore, reviews are written by those who feel motivated to share their experiences whether as a result of a particularly positive or negative experience, or they may be an active user with the motivation to gain different TripCollective Badges. The Badges recognise levels of user participation based on the number of reviews they post, the types of places they review, and on how many other users rate their review as helpful (TripCollective, 2018). Some critics have also questioned the integrity of reviews because businesses have, in the past, paid for or manipulated the system to generate falsely positive reviews. However, TripAdvisor has posted warnings and taken action by banning businesses from the website to reduce inauthentic reviews (O’Connor, 2008, p. 51). With these limitations considered, TripAdvisor is one of the largest resources of traveller information for past visitor experiences at the Australian Convict Sites. Furthermore, it is an online digital community with its own system of ethos building, where reviewers must register with personal details, as commercial email addresses are not permitted (Jeacle & Carter 2001, p. 298) and the reviews can be given a “thumbs up” (a rating system) by other reviewers which are then tallied and shown as “helpful votes” at the top of each review. Reviewers can also build their personal ethos by leaving many reviews over time, their tally being displayed on their TripAdvisor profiles.

The dataset of the TripAdvisor reviews on eight of the Australian Convict Sites had a total of 11,295 English-language reviews and 1,034,550 words. As per the results discussed in Phase 1 (Chapter 4 – see Figure 20), the sites receiving the most reviews were Port Arthur and Fremantle Prison, which each had over 3,500 reviews and the other six Australian Convict Sites had fewer than 1,600 reviews each. This indicates that Port Arthur and Fremantle Prison may be the most popular among the 11 WHS.

**WordPress blogs ethos**

Travel blogs are commonly understood to function as a method of word-of-mouth marketing and are often viewed as more trustworthy than content produced by travel companies (Pan, MacLaurin & Crotts, 2007). In this sample of 159 blog posts collected, most were written by novice bloggers rather than “influencers” or

---

101 In Phase 1 – Know the audience, reviews from all contributors were taken into account for demographic information.
professional bloggers who invest money into their equipment and may, or may not, be paid for covering a location (i.e., monetised posts). This suggests a higher level of authenticity to the content and opinions communicated because the bloggers were not paid or endorsed to write them.

*Instagram ethos*

Previous research shows people consult Instagram, among various other social media sources, during their travel planning. For instance, Instagram’s visual aspects and comments can influence travellers of Generations X and Y particularly to select a destination and/or accommodation (Terttunen, 2017; Matikititi-Manyevere, 2019; Hanifah, 2019). Hanifah’s (2019) study showed that there is a statically strong relationship (0.634) between an Instagram “travel influencer” and decisions taken regarding visiting a tourist destination (p. 245). Instagram hashtags allow users to search for content based on their interests (Hanifah, 2019); the photos allow tourists to share their experiences with others and “capture reality;” the hashtags help users classify the theme/topic and spread their content; and geotags help others find the destination (Fatanti & Suyadnya, 2015, p. 1090). A total of 9,247 Instagram posts were collected along with associated metadata, namely comments, and hashtags. For this dataset, the account profiles were not analysed individually as the purpose of the multimodal discourse analysis (using PixPlot) was to gather the main subject matter posted on Instagram to infer tourists’ interests at the WHS. However, regardless of whether Instagram “travel influencers” were included in this dataset, studies show that Instagram users are “easily influenced by the persuasion of travel photos posted by their family and friends on Instagram due to trust” (Ihsanuddin & Anuar, 2016). Therefore, the ethos of the posts is mostly attributable to Instagram’s website/application brand and how people interact with the platform’s content.

*5.2.2.2 Pathos: Amateur photography*

*TripAdvisor reviews pathos*

TripAdvisor reviews were gathered and analysed primarily for the text contributed to understand what interests reviewers about each site. In most cases, fewer than 20% of reviewers included photos (see Figure 31). For example, the Coal Mines Historic Site reviews had the highest percentage of photos which mostly featured the settlement ruins on the picturesque landscape. The Cascades Female Factory Site
reviews included the fewest photos correlating with the fact that it has the least remaining infrastructure, which suggests TripAdvisor reviewers may be more interested in the building infrastructure as the subject matter for their photography. The common theme of photos of the exterior and interior of buildings was also seen across the other Australian Convict Site reviews.

**Figure 31. Percentage of WHS TripAdvisor Reviews Including Images**

<table>
<thead>
<tr>
<th>Convict Sites on TripAdvisor</th>
<th>Percentage of Images per Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal Mines</td>
<td>26%</td>
</tr>
<tr>
<td>Cockatoo Island</td>
<td>18%</td>
</tr>
<tr>
<td>Port Arthur</td>
<td>17%</td>
</tr>
<tr>
<td>Fremantle Prison</td>
<td>13%</td>
</tr>
<tr>
<td>Hyde Park Barracks</td>
<td>11%</td>
</tr>
<tr>
<td>Old Govt. House</td>
<td>11%</td>
</tr>
<tr>
<td>Norfolk Island</td>
<td>9%</td>
</tr>
<tr>
<td>Cascades Female Factory</td>
<td>6%</td>
</tr>
</tbody>
</table>

*WordPress blogs pathos*

The total word count for all 159 collected blogs was 305,186 words. The longest blog post was 13,157 words, the shortest was 210 words, and the majority of posts (65%) ranged from 500 to 1,999 words (see Figure 32). The amount of content based on word count was high for Maria Island and Port Arthur, showing that bloggers had more to write about on these sites. The blogs had a cumulative total of 1,816 images, of which the most common type was modern photos (1,663) and some historical photos (64). Generally, the longer blog posts had more photos and each Australian Convict Site had at least one post where the majority of the content was photos (see Figure 33). Many of the image-heavy posts had 20–45 photos in a single post and one post for Maria Island had 145 digital photos (Jadah, 2018). Blog posts covering visits to Cockatoo Island contained the highest number of images comparatively (see Figure 34). The majority of the photos were of the sites, buildings, and landscape rather than photos of the bloggers themselves. Only 6% of photos (108 photos) included the blogger and/or their travel companions, which was unexpected since blogs are personal accounts.
The other modalities appearing in the blogs in addition to photos were: 68 artworks, 16 videos, 12 maps, and 9 historical documents (scanned or photographed). The 16 videos were all used in only three posts (1.9% of the total sample), one post for Maria Island, one post for Port Arthur and one post for Brickendon and Woolmers. All videos appeared to be filmed by the blogger and/or their travel companion except for
one embedded third-party video produced by Hyde Park Barracks Museum. Maps were also rarely used, appearing in only nine posts (6% of the sample). Therefore, text was the primary modality used by bloggers to communicate their experiences at the Australian Convict Sites, modern photography was the second most-common modality, and there was some expressed interest in artworks related to the sites. In terms of the tone of the writing in the sampled blog posts, they generally provided an informal, first-person summary of what they did on their trip. Some bloggers included their personal opinions on the experience and the writing style overall used few poetic devices or persuasive techniques. In other words, there was not much additional storytelling style or writing acumen compared to the third-person content written in the tourism content corpus.

**Instagram pathos**

Instagram posts for each of the 12 geotagged Australian Convict Sites (Brickendon and Woolmers being treated as separate locations) included a total of 8,981 photos, 266 videos, and 11,712 comments (see Figure 35). Surprisingly, there are more comments than total posts suggesting that Instagram, while used primarily as a visual medium, may be a platform that inspires substantial user engagement. This also suggests strong pathos because the photos and videos elicit a significant number of responses.
5.2.2.3 Logos: The long tail

TripAdvisor reviews logos

To understand the visitor experience at each of the eight sites individually, the Topics tool\(^\text{102}\) was first used for statistical topic modelling purposes. However, the results did not add context or new value to this analysis because the TripAdvisor reviews had a limited word density since the users are writing about the same topic and the corpus included intertextual references to other convict sites within the reviews. As Graham, Weingary, and Milligan (2012) argue, topic modelling is not necessary for a small number of documents and they recommend frequency counts as being more informative. Therefore, a combination of different Voyant Tools was used to gain further insight into what TripAdvisor reviewers were interested in. Across all Australian Convict Site reviews, the most frequent words used were: tour (14,148 occurrences), history (7,158), site (6,602), great (5,790), and visit (5,638). The Document Terms\(^\text{103}\) tool was subsequently used to better understand the context in which these individual words were used. This revealed 19 terms that were used frequently across reviews of the all sites, which were variations of the same root word.

---

\(^{102}\) The topics tool shows which topics (term clusters) exist and how they are distributed (Sinclair & Rockwell, 2016).

\(^{103}\) The Document Terms tool produces a table view of term frequencies (Sinclair & Rockwell, 2016).
of visit, such as visiting, visitors, visited, and visitor. Since Voyant Tools treats these 19 terms as different, they were grouped together into five main themes: (1) guided visits/tours, (2) place, (3) time, (4) positive adjectives, and (5) neutral adjectives (see Figure 36).

**Figure 36. Themes with Associated “Top Term” Counts in TripAdvisor Reviews**

![Bar chart showing top term counts for themes](image)

These five themes were examined further using the Correlations\(^{104}\) and WordTree\(^{105}\) tools to determine the intended meaning. The most frequent theme was guided visits/tours and the term tour appeared most often in proximity with positive adjectives (e.g., recommend, excellent, amazing) and thus, the tours were one of the most notable parts of the visitor experience. The term place referred to the specific Convict Site locations, nearby or related sites/places, and it was often used in association with adjectives (e.g., enlightening, special, depressing, important) communicating that some visitors experienced a dark tourism effect. The theme of time was used in the context of the Sites’ history and the amount of time tourists spent at the sites. For example, reviewers recommended that future visitors take their time at the sites, while the top term “day” was commonly used in reference to the weather. Also under the theme of time, the top term “history” referred to the convict or penal history and was collated with positive adjectives (e.g., interesting, informative). The neutral adjectives did not provide added value for interpreting the overall themes/topics of the reviewers’ experiences, but often accompanied the other common

---

\(^{104}\) The Correlations tool explores the extent to which term frequencies vary (i.e., rise and fall together or inversely) (Sinclair & Rockwell, 2016).

\(^{105}\) The Word Tree tool shows how keywords are used in different phrases in the corpus (Sinclair & Rockwell, 2016).
terms listed under the other themes. Overall, the themes show that the Australian Convict Sites are places that communicate “interesting” convict history and tend to result in generally positive visitor experiences. It is noted that the results of this distant reading did not produce topics or themes with negative experiences, which implies that there are fewer negative reviews for the Australian Convict Sites and perhaps those who enjoyed their experience were more inclined to leave a review.

To get a deeper understanding of the unique themes that emerged in the reviews for each Convict Site, the Summary tool provides a list of five distinctive words in each document compared to the rest of the whole corpus (see Table 16). The distinctive words for each site that were part of the name or location of the WHS were treated as stop words; however, the other distinctive words are discussed in more detail because they highlight the unique attributes of the visitor experience to the specific sites.

**Table 16. Distinctive Words and Associated Counts for each Convict Site**

<table>
<thead>
<tr>
<th>Australian Convict Site</th>
<th>Distinctive words* and associated counts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cascades Female Factory</td>
<td>hobart (459), actors (305)</td>
</tr>
<tr>
<td>Fremantle Prison</td>
<td>torchlight (455), tunnels (765), tunnel (454)</td>
</tr>
<tr>
<td>Hyde Park Barracks</td>
<td>audio (233), immigrants (42)</td>
</tr>
<tr>
<td>Port Arthur</td>
<td>isle (536), cruise (1,205), puer (202), hobart (602)</td>
</tr>
<tr>
<td>Old Government House</td>
<td>paramatta (51), fisher (9), mysteries (6)</td>
</tr>
<tr>
<td>Coal Mines</td>
<td>arthur (115), ruins (87), tasman (24)</td>
</tr>
<tr>
<td>Cockatoo Island</td>
<td>biennale (158), ferry (568), camping (193)</td>
</tr>
<tr>
<td>Norfolk Bay</td>
<td>lynton (112), lorella (63), jams (62), lounge (53), sherry (33)</td>
</tr>
</tbody>
</table>

* The Distinctive words exclude word in the convict site’s name, which were treated as stop words.

The Contexts tool was used to provide more information on the associated distinctive words for each WHS (as per Table 16), which led to the following topic-focused interpretations. The unique words for the Cascades Female Factory, Fremantle Prison, and Hyde Park Barracks were in reference to guided tours. For example, at the

---

106 The Summary tool provides “a simple, textual overview of the current corpus, including (as applicable for multiple documents) number of words, number of unique words, longest and shortest documents, highest and lowest vocabulary density, average number of words per sentence, most frequent words, notable peaks in frequency, and distinctive words” (Sinclair & Rockwell, 2016).

107 The Contexts tool shows each occurrence of a keyword with some surrounding text (the context), which can be useful for studying more closely how terms are used in different contexts (Sinclair & Rockwell, 2016).
Cascades Female Factory, there are actors on-site who re-enact the history and provide an immersive experience into the stories of the women who were imprisoned there. For example, one reviewer wrote: “The actors from Living History who did the Her Story Show were great also” (Amanda W, 2018). The Fremantle Prison reviews offered two tours, a “torchlight” and a “tunnels” tour. For example, reviewers wrote “The tunnels were indeed built by prisoners, but it was all to bring much needed water to Fremantle. It no longer serves that purpose, but the remains of all that effort create a fine tour” (Gogoinspectorgadget, 2018). Hyde Park Barracks Museum offers audio tours and the term “immigrants” referred to those registered at the Barracks upon entry to Sydney. For example, reviewers wrote: “You need to allow yourself 2-3 hours to listen to the audio and have a look at all the exhibits” (Kazmam, 2018); and it presents “a literal cross-section of Sydney’s history, as the building housing the museum has been a barracks for convicts, a processing centre for immigrants, an asylum for destitute women, courthouses and government offices, and all of these phases are represented in the museum” (Gaiteiro, 2018). These reviews also highlight that the Hyde Park Barracks Museum covers history beyond the convict period.

The distinct words for Port Arthur and the Old Government House referred both to the tours and the nearby places. For example, one review on Port Arthur wrote: “The ferry tour is a bit of fun and novelty [sic], as it cruises around Puer Island and the Isle of the Dead” (starmagnolia, 2018). The Old Government House’s visitors explored the Paramatta Park as one reviewer wrote: “Nice bit of colonial history set in Parramatta Park. Lots [sic] of other pieces of early Sydney town also in Parramatta and worth a day trip for tourists and locals” (Paul B, 2017). The Old Government House referred to the temporary Miss Fisher’s Murder Mysteries—an Australian TV series based in 1920s Melbourne (IMBD, 2012). For example, one reviewer wrote: “My father and I visited Old Government House when it was housing the Miss Fisher’s Mysteries Costume Exhibition” (Quinni_224, 2016). This indicates that the site also attracted visitors who are fans of the TV series. Movie or film-location tourism is a sub-community of tourists (Jewell & McKinnon, 2008; Karpovich, 2010; Rittichainuwat, Laws, Scott, and Rattanaphinanchai, 2018), who may be another potential niche interested in the Old Government House.

Lastly, the Coal Mines, Cockatoo Island, and Norfolk Bay unique words emphasised the sense of place. The reviews indicate that the Coal Mines site allows
visitors to experience exploring the historic ruins freely and there is little tourism infrastructure in terms of facilities, personnel and guides. For example, one reviewer wrote: “Self explore [sic] with only a little bit of signage, we found walking around the ruins a great way to feel the convict history” (Rattyos, 2018). Visitors to Cockatoo Island need to take a ferry from mainland Sydney and there are camping options available on-site so people may spend one or more nights on the island. For example, one reviewer wrote [sic]: “There are places to stay – from camping to luxury as well as a couple of cafes” (Sydney, Australia, 2018). The fact that many visitors to Cockatoo Island went during the events for the Biennale of Sydney – a contemporary art event in Sydney (Biennale of Sydney, 2018) – suggests that convict history and heritage was not the primary reason for their visit to the WHS. In reference to Biennale, a reviewer wrote “I recommend going during the Biennale – it adds another dimension BUT definitely do the tour because otherwise it could all be a bit unintelligible (or maybe that's just me)” (Mairwen1, 2018). The Norfolk Bay Convict Station had five unique words and the reviews focus on the overnight stay hosted by Lynton and Lorella—the owners of the historic building and the amenities offered for guests, namely the jams, lounge and sherry. For example, one reviewer wrote: “We particularly appreciated the delicious fresh bread, home laid eggs and home made [sic] jams that were available for breakfast, and also the friendly and helpful hosts…” (Susan A, 2018). The reviewers commented more on their experiences as a guest at the Norfolk Bay Convict Station rather than on the convict history or other contexts surrounding the historic site. Like Cockatoo Island visitors, this suggests that the primary purpose of the reviewers’ visit was not motivated by the site’s historic significance.

In regard to the perspectives or groups mentioned in reviews, the term “female” was mentioned 300 times in reference to convicts and the Cascades Female Factory; the term “British” was mentioned 116 times and referred to the convicts, the empire, history, penal system and settlements; the term “Irish” was mentioned 92 times in the context of the famine, orphans and women; “Aboriginal” appeared 37 times in the context of art, history and people; and finally “American” was mentioned 32 times in relation to colonies and the revolution. Therefore, these five main perspectives highlight the main groups of interest to the WHS visitors.
Using the Contexts tool, the terms “world heritage” were searched and revealed that reviewers mentioned the world heritage status 301 times and the UNESCO status specifically 53 times. Assuming that each reviewer would only mention the world heritage status once per review, the designation appeared in only 2.7% of reviews. This indicates that most visitors may not be aware that they visited a WHS or the designation may not be a primary motivating factor for their visit to the site.

**WordPress blogs logos**

The highest number of posts were written on the Hyde Park Barracks Museum and secondly on Cockatoo Island (see Figure 37). Considering the popularity of the Port Arthur Historic Site (based on the results of the previous datasets—travel guidebooks and TripAdvisor reviews), it is notable that few blogs appeared in the search.

**Figure 37. Number of WordPress Blog Posts Gathered Related to Each WHS**

![Bar chart showing the number of blog posts related to each WHS]

The total number of words for blogs written on each WHS was low\(^{108}\) and thus, close reading was required to determine the topics. The close reading process involved reviewing the blog title and content of each post to determine the topics for each convict site, which were then grouped into the wider themes (see Table 17). The most

---

\(^{108}\) There were also challenges with using saved HTML files for the blog posts because Voyant Tools included the analysis of all text including the metadata such as the blog post date, the user button text (e.g., “like,” “reply,” “email,” etc.).
common theme of interest for bloggers was the history of sites, which included many non-UNESCO sites related to the convict penal system. A few blogs also provided practical tourist information about the on-site or nearby accommodation and places to dine. Overall the blogs did not have any calls to action, nor did the authors pose questions to the readers or include any type of proposed interaction with the readers.\textsuperscript{109}

There was little engagement with the prospective readers; most blogs had no comments from readers and those that did often only had two or three comments that did not pose questions or foster discussion. The total number of comments across all blogs was 140 and of these, two blogs had a number of comments on a single post, such as one post on Maria Island which had 18 reader comments (Debbie, 2017) and a post on Port Arthur had eight reader comments (Port Arthur, 2014). Thus, this sample showed limited digital community interaction compared to the Instagram posts on the Australian Convict Sites even though it is a text-based medium.

\begin{table}[h]
\centering
\begin{tabular}{lll}
\hline
Number & Topics & Theme \\
of topics & & \\
\hline
19 & Stories of convicts including genealogy tracing; related non-UNESCO designated convict sites; convict ships; and books on convict history & Convict history \\
8 & Transportation modes (driving, walking, cruise); accommodation; cafes & Practical tourist information \\
5 & Immigrant women; Irish famine; Aboriginal Australians & Histories about people \\
3 & Nature; landscape; wildlife & Natural environment \\
1 & Art; photography & Artworks \\
\hline
\end{tabular}
\caption{Themes in WordPress blogs on Australian Convict Sites}
\end{table}

The perspectives were gathered from blog titles and a keyword search of the whole dataset in Voyant Tools (based on keywords from the guidebook analysis results). Those mentioned were the Irish, British, ladies/women, Aboriginals, Scottish, and Welsh.

The term “world” was used to find mentions of the UNESCO designation because a search in Voyant Tools for UNESCO did not produce results. The term

\textsuperscript{109}The individual blog post comments were not scraped and analysed for content because they would not add additional value for the purposes of topic modelling or determining modality usage. A close reading showed the comments were often short and confirmed that the place looked “beautiful” or sounded “interesting.” There were also very few blogs with comments.
world was used 295 times and in only 49 cases it referred to UNESCO World Heritage status. Assuming one mention per post, the world heritage status likely appeared in 31% of all posts. Although there is some recognition of heritage values in this sample, five bloggers engaged in behaviour that is prohibited or discouraged by the site’s management policy as evidenced in the photos posted in the blog. Those that endangered the integrity of the historic sites and wildlife were children (at Cascades, Coal Mines and Cockatoo Island), a woman who was photographed climbing and standing on historical buildings (Coal Mines), a woman lying on the ruins of a convict cell on Maria Island, and a man who appears to be a senior (60 years+) handling a wild wombat on Maria Island. This demonstrates either a lack of awareness or respect for the UNESCO WHS designation and conservation efforts or shows that additional efforts may need to be made by the management authorities to clearly communicate and mitigate behaviours that negatively impact the integrity of the historic sites’ conservation.

**Instagram logos**

The thematic clustering of similar images was completed using PixPlot to show which subject-matter visitors take the most photos of. Each Australian Convict Site’s photos were grouped into five clusters, but not every site produced five different clusters. The exceptions were Cascades Female Factory, Fremantle Prison, and Hyde Park Barracks, each of which had four distinct clusters. The different clusters across the geotagged sites highlighted seven main themes in the photographed subject matter: (1) buildings and infrastructure (e.g., ruins, cells, tunnels), (2) equipment (e.g., cranes, hammocks, sculptures), (3) ocean/beach (e.g., ocean, lakes, bodies of water), (4) people (e.g., selfies or groups of friends), (5) landscapes (e.g., wider shot photos of the area), (6) nature (e.g., the focal point was wood, rocks, trees, plants), (6), and (7) animals (see Figure 38).
Under these seven themes, specific topics emerged in the PixPlot clusters at each site. The Australian Convict Sites’ photos that focused primarily on the buildings and infrastructure were Woolmers Estate, the Old Great North Road (e.g., the road itself and sculpture of convict workers), Coal Mines (e.g., ruins of buildings), Port Arthur (e.g., main penitentiary and the church), Hyde Park Barracks (e.g., main barracks building), Cascades Female Factory (e.g., words on a metal wall within the historic site), and Fremantle Prison (e.g., main penitentiary). Cascades Female Factory’s sample was particularly lacking in images with people as the other sites included at least a few photos containing people. Fremantle Prison’s clustered photos had the highest level of consistency as the subject matter had nearly identical image compositions. Sites featuring the most equipment in the form of furniture and machinery were the Old Government House and Cockatoo Island. For example, Cockatoo Island had a small cluster of black and white photos of the cranes/machinery and a cluster of interior structures, which gives a dark tourism/artistic aesthetic to the photos. Maria Island’s and KAVHA’s (Norfolk Island) photos focused mostly on the beach, ocean, nature and landscape. Notably, the UNESCO designated portion of Maria Island, the Darlington Probation Station buildings, were not photographed (except for the governor’s house that sits atop a hill farther away from the convict area). KAVHA was similarly photographed for its sunny tree-lined landscape rather than convict-built historical buildings. Brickendon and Cockatoo Island included the most photos of people. For example, Brickendon had two clusters of people—one showed groups of people in wedding parties and the second had married couples.
Of the total Instagram posts scraped, 3% of the sample were video posts. The topics of video posts were coded through close reading (i.e., viewing each video) because PixPlot only clusters photos. The most common video topic was the natural world with the videos of animals, landscape, and beach/ocean combined into one category containing 107 videos. The second most common video subject-matter was people who were often dancing or vlogging\textsuperscript{110} about being at the location. Fremantle Prison had a high number of videos with people in them (62%) and the video clips were very short and unedited prior to posting suggesting that users are capturing a moment and sharing immediately on Instagram. The subject-matter of the natural world and people in the video content is logical considering the affordance of the medium is capturing motion rather than taking video of the static buildings, which was the most common subject matter of the photography.

\textbf{Figure 39. Main Subject-matter Featured in Instagram Videos}

![Diagram showing the number of videos by theme](image)

The text associated with the Instagram photo and video posts – the captions, comments and hashtags – were also analysed using Voyant Tools. The captions for all the Instagram posts totalled 175,744 words and the most-frequently-used words were Tasmania, Australia, Sydney, prison, and island, demonstrating that the captions largely cite where the photos were taken (see Image 21). After location-based words, the other top terms were history, day, and beautiful, which indicates similar references to the history and weather as seen in the TripAdvisor reviews. Across the entire dataset, there were 11,712 comments and 99,939 words. The comments with the highest word counts appeared under Cockatoo Island (17,826) and Maria Island’s (14,892) posts.

\textsuperscript{110} Vlogging, or creating a video blog, is a genre of UGC that involves the creator speaking directly to the camera about a topic.
The most frequent comment type was various emojis\(^{111}\) (3,373) and many commenters repeated the same emoji multiple times in a row. The most-used words were love (863) and beautiful (635). Thus, the comments demonstrate an interest in the historic island locations and an emotional response from viewers because emojis are symbolic representations of emotions used to communicate a feeling.

**Image 21. Most-frequent Words in Instagram Captions Exported from Cirrus Tool (Sinclair & Rockwell, 2016)**

Hashtag usage on the Instagram posts contributed to the thematic understanding of each Australian Convict Site and were more informative than the comments because the data were more consistent. The most-used hashtag for each convict site referred to the site’s specific location or name: #tasmania, #brickendonestate, #cockatooisland, #fremantleprison, #parramatta, #sydney, #nortfolkisland, #mariaisland, and #oldgreatnorthroad. These hashtags were noted for the later dissemination of the iDoc prototype to target audience to gain participants for user testing. Each site also had a number of other frequently-used unique hashtags (excluding location name) that appeared on posts (see Table 18). The hashtags correspond with the subject-matter of the photos as per the PixPlot clustering and were tourism-focused. For example, #hobartandbeyond is the name of a Tasmanian tour agency, #discovertasmania is the Tasmanian Government’s tourism body, and #seeaustralia is used by Tourism Australia’s official Instagram account. This shows that tourists may be aware of the national tourism bodies, their social media accounts, slogans and hashtags. The other hashtags were grouped into the themes of history.

\(^{111}\) The emojis were converted to symbols within Voyant Tools, which are not analysable as text.
art/photo/film, nature/animals, love, and non-profit. The hashtags for Old Government House also correlate with the TripAdvisor comments on the Miss Fisher Murder Mysteries TV Series filming location and further reiterates that this location attracts tourists who are fans of the series. The Old North Road hashtags had the strongest theme of Australian convict history and labour, followed by Cascades Female Factory.

Table 18. Frequently used Hashtags at Each Geotagged Site on Instagram

<table>
<thead>
<tr>
<th>Geotagged site</th>
<th>Unique hashtags (associated theme)</th>
<th>Hashtag themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brickendon</td>
<td>wedding, love, tasmanianwedding, bride (4, 5)</td>
<td>(1) Destination</td>
</tr>
<tr>
<td>Cascades</td>
<td>history, convicts, discovertasmania, australianconvictsites (1, 2)</td>
<td>(2) History</td>
</tr>
<tr>
<td>Coal Mines</td>
<td>tasmanpeninsula, ruins, history, hobartandbeyond (1, 2)</td>
<td>(3) Art/photo/film</td>
</tr>
<tr>
<td>Cockatoo Island</td>
<td>travel, photography, photooftheday, art, visitnsw, tasmaniagram (1, 3)</td>
<td>(4) Nature/animals</td>
</tr>
<tr>
<td>Fremantle</td>
<td>prison, freoprison, travel, perthisok, history (2)</td>
<td>(5) Love</td>
</tr>
<tr>
<td>Old Government House</td>
<td>nationaltrust, nationaltrustnsw, missfishermurdermysteries, discoverparramatta (6, 3,1)</td>
<td>(6) Non-profit</td>
</tr>
<tr>
<td>Hyde Park</td>
<td>travel, photography, history, nsw (1, 2, 3)</td>
<td></td>
</tr>
<tr>
<td>Kingston</td>
<td>islandlife, travel, southpacific, island, emilybay, beach, ocean (1, 4)</td>
<td></td>
</tr>
<tr>
<td>Maria Island</td>
<td>discovertasmania, wombat, travel, nature, tasmaniagram, seeaustralia, eastcoasttasmania (1, 4)</td>
<td></td>
</tr>
<tr>
<td>North Road</td>
<td>convicttrailproject, visitnsw, convicttrail, wisemansferry, convictbuilt, heritage, ilovesydney, greatersydney (1, 2)</td>
<td></td>
</tr>
<tr>
<td>Port Arthur</td>
<td>travel, history, discovertasmania, Hobart (1, 2)</td>
<td></td>
</tr>
<tr>
<td>Woolmers</td>
<td>discovertasmania, roses, nature, tassiestyle (1,4)</td>
<td></td>
</tr>
</tbody>
</table>

World heritage status was included 83 times in total across all the text collected on the Instagram posts, which, if mentioned once per post, totals less than 1% of the sample. Commenters mentioned UNESCO 17 times and used a variety of different phrases, such as “world heritage,” “world heritage site,” and “world heritage city,” among others. World heritage status was used in hashtags, such as #worldheritage (29 occurrences), #worldheritagesite (9), and #worldheritagelisted (5). In regard to conservation management, the Coal Mines posts showed nine photographs of people

Note: Australia does not have any UNESCO designated World Heritage cities, so this misuse shows the variability in the credibility of UGC.
sitting or standing on the ruins, including females, males, and children. Similarly, on Maria Island, there were photos of 12 people (9 women and 3 men) interacting with, petting or taking photos within inches of wombats. These actions, as seen in the blog posts sample, go against the conservation communications included on the Coal Mines website and the Maria Island leaflet, which reiterates the issue of on-site tourist behaviour impacting the integrity of the historic sites.

5.2.2.3 Discussion of UGC findings

In the UGC corpus, the ethos lies in the idea that the content being created by tourists for tourists, and it serves as a form of electronic word-of-mouth marketing that consumers view as more authentic or truthful. Therefore, UGC presents alternative authorities on the subject matter. The UGC corpus shows more than it tells and thus, there is more emphasis on the pathos in terms of visually capturing the sites as evidenced by much heavier use of photography and video compared to the other datasets and the emotive responses in the comments sections. The text in the UGC corpus was written in first-person and the imagery focused heavily on the infrastructure and made up a substantial portion of the communications. Interestingly, the themes emerging from Instagram posts closely aligned with each site management authority’s vision as stated in the public reports and the rhetoric on the official websites, which suggests that their communication/marketing goals were achieved. The modern-day and multi-purpose uses of the WHS was evidenced in the photos and TripAdvisor reviews (e.g., weddings, camping, amenities, temporary exhibits), which adds another newer cultural-use layer to the heritage sites. UGC particularly exposed the unique marketable features of each site and pointed to places where the narrative could potentially be expanded beyond the 11 UNESCO WHS. The corpus also highlighted long-tail information, such as other convict sites that are not UNESCO-designated (as seen in the blog posts), books and art related to convict history, and the surrounding nature and landscape especially for the Coal Mines, Cockatoo Island, and Norfolk Island Sites. Although, UNESCO designation was rarely mentioned, appearing in 11.3% of the time across datasets. Based on these results, the iDoc invention will incorporate heavy use of photography and some video in terms of modalities, and provide narrative paths for produsers to learn more about nearby related attractions (beyond the WHS) and hyperlinks to practical tourism information to provide transmedia extensions to the narrative.
5.2.3 Expert-Produced Results

5.2.3.1 Ethos: The authorities

**Expert web pages ethos**

The sample of expert-produced content included 30 web pages\(^{113}\) totalling 70,435 words. Based on information gathered from the About pages, the content was written by governments, historians/scholars, museums/libraries/teachers, publishers/authors, and historical/heritage associations. The expert web pages were distinguished from UGC based on the authors writing from a position of authority or professional employment and evidence of research having been conducted on the subject matter (e.g., citing other sources). Previous studies on expert or academic blogs show that they are often used to build relationships with other researchers, reduce feelings of research isolation, interact with “like minded-thinkers who are inside or outside of academia,” and as a form of informal and open education that goes beyond traditional forms of teaching (Terblanche & Goodwin-Davey, 2013, p. 377). In other words, expert websites/blogs are written to engage in knowledge dissemination and exchange with audiences outside the person’s immediate network. Therefore, expert blogs may be considered an easier entry point into research (improving accessibility) and as a method of public engagement. This dataset speaks to creating a *shared authority* relationship between historians/experts and audiences/the public, where shared authority, coined by Fisch (1990), refers to the “democratization of the knowledge-building process” (Cauvin & O’Neill, 2017, p. 814).

**Academic publications ethos**

A total of 58 documents with peer-reviewed publication dates between 1989 and 2018 were analysed totalling 1,101,083 words. The academic articles were acquired by searching on Google Scholar and Trinity College Dublin’s academic journal subscriptions. Many of the articles on Australian convict history were written by archaeologists and historians. The authors with the most publications in this sample were historian, Hamish Maxwell-Stewart (13 articles) and archaeologist, Richard Tuffin (10 articles). These two researchers hold PhDs, are based in academic institutions and publish detailed high-level studies on Australian convict history.

\(^{113}\) Only the individual web pages with the content pertaining to the Australian convicts or the individual WHS names were analysed rather than the complete websites.
which create very strong ethos. Maxwell-Stewart and Tuffin, among the other academic authors in this sample, refer to primary data sources and draw conclusions and highlight new narratives about the past. These articles were written from a position of authority and they went through the gatekeeping process of peer-review by other experts before they were published. Therefore, the ethos is high in terms of their level expertise, their work is supported by an institutional brand, a group of peers, and the rank of the academic journal the papers were published in, which carries their own ethos as well.

**Songs and ballads ethos**

In terms of ethos, transportation ballads can be considered a primary source from the convict past since they were written by convicts or at least documented by those who would have been alive at the time and privy to tales of transportation. Although this sample is small, the ballads offer another modality, namely poetry/music, for further insight into Australian convict history. Oral storytelling and songs were how history was recorded in the past, especially by those who were unable to write, which was the case for many transported convicts. Transportation ballads were songs published on single sheet (i.e., broadsides) which were the tabloids of the period. As Fahey (2014) explains, the songs were often first-person accounts of the convicts’ separation from their family and lovers, the fear of being sent so far from their homeland by ship, and deprivation and mistreatment from the system. A number of websites containing convict songs or ballads were also retrieved during the search for websites and blog content on the 11 Australian Convict Sites. There were seven YouTube videos of the songs, seven web pages of lyrics, and the remaining two websites were Wikipedia entries for “Transportation ballads” and “Warren Fahey’s Australian Folklore unit.” These songs are evidently still consumed and relevant in the present day, which demonstrates that they have a strong ethos of being passed down through the generations in different remixes and content modalities. A total of 16 websites with 22 songs/ballads containing 17,547 words were collected and analysed.

---

114 The transportation ballads appear on Wikipedia, which is a user-generated source of content, but the focus of this dataset is the lyrics of the songs/ballads and thus, Wikipedia is not included in the UGC dataset.
5.2.3.2 Pathos: Data visualisations and music

**Expert web pages pathos**

In terms of multimodal content used, 17 websites (56%) used at least one other mode of content in addition to text. The modes included were: 58 photos (34 digital and 24 historical), 8 paintings, 4 illustrations, 2 videos, and 1 map. Therefore, the most common modality after text was photography. More historical photography was used compared to the tourism brochures and blogs. The other modes of content were used to add explanatory value visually rather than being included gratuitously as was done in the tourism corpus. The tone of the content was more formal than the UGC blog content and described the history in third person. The content was written in an accessible manner as there was reduced use of disciplinary-specific jargon and fewer academic references and citations compared to academic papers. Therefore, the pathos focuses on text and communicating a single idea in a more simplified, informal way.

**Academic publications pathos**

In terms of the use of multimodal content, 47% of academic publications included modalities other than text. The types of modalities appearing were: 91 artworks (e.g., paintings, sketches, or illustrations), 91 maps, 80 figures to represent data/findings, 60 digital photos, 58 blueprints, 9 historical photos, and 8 scanned documents (i.e., historical artefacts). The scholars evidently accessed and published artwork retrieved from archives, including maps to show where buildings historically stood based on archaeological digs, and they used many figures (e.g., pie charts and graphs) to represent their data and research findings. Unlike other datasets in this corpus, the heavy reliance on maps indicates a spatial investigation of the Australian Convict Sites. The artworks and maps provided a visual method of re-imagining of the landscape and infrastructure during the convict period than digital photography, which captures the current state of the sites, does not show. Therefore, the academic publications had much stronger pathos in terms of imagery, adding more semantic depth to the information than expected since the primary modality is text.

---

115 Tables were not counted within the “figure” category because they are text-based.
Many previous studies have shown that music impacts people’s psychological mood or emotions. For example, Sousou (1997) showed that people’s mood was affected by the melodies rather than lyrics; McCraty, Barrios-Choplin, Atkinson, and Tomasino (1998) showed that different music genres affect people’s feelings, such as rock music can increase hostility and tension, and “designer” music can lead to increased positivity and relaxation. The relationship between music and mood has also been researched in the context of marketing (Bruner, 1990). Music and mood also have a long history of association with genre conventions in productions (Scherer & Zentner, 2001). For example, certain music is commonly seen in film genres, such as horror, romantic comedies and action. The tone of the songs and ballads are sorrowful and can elicit feelings in listeners through the lyrics and melodies. The style of these ballads lived well beyond the eighteenth and nineteenth centuries when they were written during transportation, and themes on convict transportation are heard in more recent Irish and Scottish songs, for example. Therefore, the ballads situate the history within a serious tone and the sadness that the transported convicts may have felt at the time. The only other dataset that evidently elicited an emotional response in this multimodal discourse analysis were the Instagram commenters use of emojis. Thus, the pathos communicated by the songs and ballads in this sample are informative for setting the mood of the iDoc protostories.

5.2.3.3 Logos: Australian identity

The 30 web pages in the sample had between 500-3,000 words with most ranging between 1,000-2,000 words (see Figure 40), which is the same average length of the user-generated blog posts. The most common terms were John, Middlesex, London, William, and Thomas. John, William and Thomas were names of convicts and they were sentenced in Middlesex and London, UK. Another term that appeared 422 times was “life,” which was used in reference to the convict’s life sentence. This shows that the experts were writing about individual convicts rather than about the Australian Convict Sites’ history. To gain further insight, the main topics of each web page were also manually coded through close reading to reveal the four main content themes of: groups of convicts (15 web pages), world heritage sites (9), Australian
history and identity (3), and transportation (2). The WHS appearing in the expert websites were Norfolk Island (3 occurrences), Maria Island (2 occurrences) and one occurrence each for Hyde Park, Old Government House, Coal Mines, and Old North Road. The websites cover very specific details regarding the transported convicts, such as what they were sentenced for and they included sites that are less-frequently visited by tourists (i.e., Norfolk, Coal Mines, and Old North Road). Overall, experts writing blogs or articles were most interested in the convicts and convict stories, such as prisoner escapes. The perspectives included were Irish Canadian, Scottish, English, Aboriginal, and women.

In this sample, UNESCO designation was not mentioned, but “world heritage” was used 43 times in reference to “world heritage-listed” sites and areas. The term conservation also occurred across the web pages 32 times and was used in the context of protecting the landscape and biodiversity.

**Figure 40. Word Counts for Expert Content Web Pages**

<table>
<thead>
<tr>
<th>Number of words</th>
<th>Number of webpages</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000+</td>
<td>3</td>
</tr>
<tr>
<td>3000-5000</td>
<td>5</td>
</tr>
<tr>
<td>2000-3000</td>
<td>6</td>
</tr>
<tr>
<td>1000-2000</td>
<td>10</td>
</tr>
<tr>
<td>&lt; 1000</td>
<td>6</td>
</tr>
</tbody>
</table>

**Academic publications logos**

The most common words appearing in the 58 documents were labour (2,382 occurrences), John (2,049), and colonial (1,808). The term labour was used in reference to private versus public labour supplies, convict labour, and colonial labour markets. The name John referred to Sir John Franklin, John Montagu the Colonial Secretary, and many different convicts. The term colonial was associated with administration, authorities, government, labour/job markets, the Colonial Secretary, and *The Colonial Times* newspaper in Tasmania. Further analysis, using the Document Terms tool

---

116 After the additional stop words of “convict,” “convicts,” “pp” and “new” were removed.
showed that the term “desertion” appeared 1,165 times and the term “coal” appeared 1,053 times. Coal was used in the context of the mining in Tasmania, and desertion referred to the desertion charges laid to soldiers from Jamaica, Scotland, Canada, India, New Zealand, the British Isles, the Cape, West Indies. Using the Topics tool with a limit of 10 topics, the terms timber, sawmill, log slides, and sawpits highlighted the theme of the timber industry. Timber was associated with convict labour of carrying heavy timber logs and with the construction of timber structures (e.g., buildings, jetty, cells) at the convict sites. In sum, the keywords highlighted a focus on colonial convict labour and industries.

Although the word counts highlighted some key topics, the documents were also manually coded through a close reading of titles and abstracts to identify larger themes of discussion, the associated location or specific convict site (where applicable), and perspectives included in the academic research. The resulting themes (with some articles covering two themes) were: convict life and treatment; Australian identity and history; labour and industry; heritage and tourism; violence and punishment; transportation; and morals, values and religion. This demonstrates the breadth of concepts covered in the academic dataset and also highlights themes that were not widely addressed in the tourism industry and UGC datasets. In terms of locations mentioned in the documents, the most common were Australia (appearing in 19 articles) and Tasmania (in 14). The specific Australian Convict Sites receiving more attention were Port Arthur (appearing in 8 articles) and Hyde Park Barracks (appearing in 4). A number of convict sites beyond the 11 WHS were also included (as the UGC blogs dataset did) including Point Puer, Carters’ Barracks, Moreton Bay Penal Settlement, Port Macquarie, Sarah Island, Port Phillip, and Ross Female Factory. Frequently-mentioned perspectives were Australian Indigenous, British, women, and American prisoners.

In terms of UNESCO designation and conservation, the terms “world heritage” appeared 300 times in this sample of 58 documents, which indicates that it was mentioned multiple times per document, but UNESCO designation was mentioned only 7 times (or in 4% of the documents). The terms “world heritage” appeared most commonly in the context of their nomination/criteria/register, values, area and reports. This shows that scholars more frequently note the importance of world heritage status compared to other datasets.
The songs and ballads lyrics were analysed in Voyant Tools to identify recurring words. The most frequent terms appearing in the dataset were songs, bay, land, botany and home. The words “Botany” and “Bay” appeared together (the name of the arrival location of convict ships); the term home appeared along with “sweet, sweet, sweet,” and the term land was often in reference to Van Diemen's Land (the former name of Tasmania). The topics of the 22 songs were coded through close reading and subsequently grouped into themes. The five themes that emerged from this sample of songs were:

1. the types of crimes committed (9 occurrences),
2. remorse about leaving their home and transportation (4 occurrences),
3. a woman’s love lost/gained due to transportation (4 occurrences),
4. cursing the authorities and types of punishment of the convicts (4 occurrences), and
5. freedom after serving their sentence (1 occurrence).

The ballads read like poems and rarely have repetitive choruses and stanzas. The ballads tell a complete story and use rhymes and repeat specific words (e.g., the name of the song) to tie the story together.

In regard to the perspective, this dataset differs from the others. The first-person ballads are assumed to be written by male convicts considering fewer females were transported and many songs recollected the love for a woman.\(^{117}\) Topics not prominent in the convict ballads are the harshness and dangers of the Australian landscape, elements or wildlife; the mention of child convicts or leaving their children behind; the Aboriginals; and the assignment/work system. This suggests that the transportation ballads were written or performed on the ships and/or shortly after arrival to Australia. Being a primary resource, and pre-dating the 2010 UNESCO designation, the mention of world heritage status is not applicable to this dataset.

\(^{5.2.3.4}\) Discussion of expert corpus findings

The expert-produced content has the highest level of ethos because the content is written by authors who are named front and centre on the publications, they are the authorities on convict history. The travel guidebooks and brochures are managed by a

\(^{117}\) A socio-cultural note: homosexuality was not socially accepted during the transportation period.
stringent gatekeeping process of peer-review, the expert blogs aim to reach the public in a more accessible manner, and the convict ballads can be considered primary sources from the time period. This corpus focused more on convict life and the groups impacted by the penal settlements and colonisation of Australia. The expert-produced corpus provides more details and context on the wider historical impacts, including maps of the sites’ infrastructure and archaeological digs. It ties the convict history into Australia’s wider history, which could be of interest to iDoc producers who are “absorptive cultural tourists” (Ramires et al., 2018) and want deeper contextual information about the convict past. The pathos in the expert-produced corpus was stronger than expected since it had the most diverse usage of modalities including text, figures, maps, artwork, and music.

In terms of logos, the academic web pages and publications discussed convict treatment, transportation, the labour system, morals/values/religion, and Australian identity. The songs/ballads expressed the convicts’ feelings about being transported and leaving their homeland. The song lyrics included mention of Botany Bay and Moreton Bay rather than the specific prisons (i.e., world heritage sites) suggesting that the infrastructure was not yet well-established or known by name in the UK and Ireland when they were written. It also includes lesser-known perspectives of those impacted by transportation including juvenile offenders, Canada, Jamaica, India, New Zealand, Cape Town (aka The Cape), and the West Indies. UNESCO designation is collectively not often mentioned across the corpus (an average of 14.5%) and thus, while the brand itself does not seem to interest scholars working on Australian convict history to date, they frequently-mention world heritage. The expert corpus importantly provided a larger macro-narrative theme of Australia’s history and national identity for the iDoc prototype which helps connect the micro-narratives together.

5.3 Cross-Comparison of Three Corpora

The following cross-comparison summarises the main findings from each dataset within each corpus to highlight the topics covered, the modalities used, perspectives included, the mentions of UNESCO WHS status and conservation measures. Table 19 provides an overview of the quantitative size of each corpus and shows that the UGC corpus was the largest, followed by expert-produced content, and finally tourism-industry content. The richest dataset for the purposes of content
modelling in the tourism industry corpus was the Australian Convict Sites’ websites, the TripAdvisor reviews in the UGC corpus, and the academic publications in the expert-produced corpus.

Table 19. Quantitative Results Across the Nine Datasets

<table>
<thead>
<tr>
<th>Tourism corpus</th>
<th>Total artefacts: 25</th>
<th>Words: 533,567+</th>
<th>Images: 1,163</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidebooks</td>
<td>5 with 72 pages</td>
<td>188 paragraphs</td>
<td>108 images</td>
</tr>
<tr>
<td>Websites*</td>
<td>12 with 612 pages</td>
<td>533,567 words</td>
<td>967 images</td>
</tr>
<tr>
<td>Brochures</td>
<td>8 with 65 content panels</td>
<td>270 paragraphs</td>
<td>93 images</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>User-generated corpus (UGC)</th>
<th>Total artefacts: 38,645</th>
<th>Words: 1,439,675</th>
<th>Images: 12,182</th>
</tr>
</thead>
<tbody>
<tr>
<td>TripAdvisor reviews*</td>
<td>11,295 reviews</td>
<td>1,034,550 words</td>
<td>1500 images</td>
</tr>
<tr>
<td>Blogs</td>
<td>159</td>
<td>305,186 words</td>
<td>1701 images</td>
</tr>
<tr>
<td>Instagram</td>
<td>9,247 posts</td>
<td>11,712 comments with 99,939 words; 6,232 hashtags</td>
<td>8,981 photos; 266 videos</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expert-produced corpus</th>
<th>Total artefacts: 104</th>
<th>Words: 1,189,065</th>
<th>Images: 468</th>
</tr>
</thead>
<tbody>
<tr>
<td>Websites</td>
<td>30 sites</td>
<td>70,435 words</td>
<td>71 images</td>
</tr>
<tr>
<td>Academic publications*</td>
<td>58 documents</td>
<td>1,101,083 words</td>
<td>397 images</td>
</tr>
<tr>
<td>Songs</td>
<td>16 websites with 22 songs</td>
<td>17,547 words</td>
<td><em>not applicable</em></td>
</tr>
</tbody>
</table>

*Most informative dataset in the corpus.

Across the nine datasets, the amount of content published on each Australian Convict Site is indicative of the level of interest tourists and experts collectively have for each site (see Table 20). The WHS that received the most attention in terms of the existing content was Hyde Park Barracks followed by Port Arthur and then Fremantle Prison. The Sites receiving the least attention in terms of existing content were: Brickendon, KAVHA, and the Old Great North Road. The results indicate that some Convict Sites will have more protostories/content available for remixing than others.
Table 20. WHS Existing Content Overview Ordered from Most to Least

<table>
<thead>
<tr>
<th>Site</th>
<th>Guide books (5/5)</th>
<th>Brochures (&lt;text paragraphs&gt;)</th>
<th>Websites (100,000+)</th>
<th>TripAdvisor (3,800+)</th>
<th>UGC Blogs (&lt;25+)</th>
<th>Instagram Posts (1000+)</th>
<th>Papers (&lt;1000)</th>
<th>Expert blogs (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyde Park Barracks</td>
<td>5/5</td>
<td>--</td>
<td>100,000+</td>
<td>3,800+</td>
<td>25+</td>
<td>1000+</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Port Arthur</td>
<td>5/5</td>
<td>55+</td>
<td>100,000+</td>
<td>3,500+</td>
<td>&lt;10</td>
<td>1000+</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Fremantle Prison</td>
<td>4/5</td>
<td>--</td>
<td>100,000+</td>
<td>1,500+</td>
<td>&lt;10</td>
<td>1000+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cascades Female Factory</td>
<td>3/5</td>
<td>&lt;30</td>
<td>45,000+</td>
<td>1,000+</td>
<td>25+</td>
<td>&lt;500</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Cockatoo Island</td>
<td>1/5</td>
<td>&lt;30</td>
<td>45,000+</td>
<td>&lt;1,000</td>
<td>25+</td>
<td>1000+</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Old Government House</td>
<td>3/5</td>
<td>&lt;30</td>
<td>&lt;20,000</td>
<td>&lt;200</td>
<td>&lt;10</td>
<td>1000+</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Coal Mines</td>
<td>2/5</td>
<td>&lt;30</td>
<td>&lt;20,000</td>
<td>&lt;200</td>
<td>&lt;10</td>
<td>&lt;500</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Woolmers</td>
<td>3/5</td>
<td>--</td>
<td>&lt;20,000</td>
<td>0</td>
<td>&lt;10</td>
<td>&lt;1000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Darlington/Maria Island</td>
<td>2/5</td>
<td>30+</td>
<td>&lt;20,000</td>
<td>0</td>
<td>10+</td>
<td>&lt;1000</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Brickendon</td>
<td>2/5</td>
<td>30+</td>
<td>&lt;20,000</td>
<td>0</td>
<td>&lt;10</td>
<td>&lt;500</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Kingston/Norfolk</td>
<td>0</td>
<td>--</td>
<td>&lt;20,000</td>
<td>200+</td>
<td>&lt;10</td>
<td>1000+</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Old North Road</td>
<td>0</td>
<td>--</td>
<td>&lt;20,000</td>
<td>0</td>
<td>&lt;10</td>
<td>&lt;500</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

The cross-comparison of the nine datasets shows that the most popular modality after text was modern photography, followed by videos, and then artworks (see totals in Table 21). Modern photography is the most accessible modality for the public as demonstrated by their high concentration in UGC (e.g., Instagram, blogs, TripAdvisor) as well as the Australian Convict Sites’ websites in the tourism corpus. There were a high number of videos produced by Instagram users and by the site management authorities as per the website content; for example, Hyde Park Barracks included 38 videos. An unexpected modality that frequently appeared across the datasets were artworks, which were used often in the Australian Convict Sites’ websites, in academic publications, and by bloggers, suggesting tourists visiting the WHS have an interest in art and this modality should be featured in the iDoc prototype.
Table 21. Modalities Across Nine Datasets

<table>
<thead>
<tr>
<th></th>
<th>Digital images</th>
<th>Historic images</th>
<th>illustrations/art/scanned docs</th>
<th>Diagram/blueprint/figures</th>
<th>Map</th>
<th>Video</th>
<th>Audio</th>
<th>3D/animation/interactive functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Guidebooks</td>
<td>26</td>
<td>25</td>
<td>3</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian Convict Websites</td>
<td>763</td>
<td>86</td>
<td>104</td>
<td>1</td>
<td>7</td>
<td>45</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Tourism Brochures</td>
<td>50</td>
<td>20</td>
<td>11</td>
<td>4</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TripAdvisor Reviews</td>
<td>1500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WordPress Blogs</td>
<td>1663</td>
<td>62</td>
<td>70</td>
<td>9</td>
<td>1</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instagram posts</td>
<td>8981</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>266</td>
<td></td>
</tr>
<tr>
<td>Expert web pages</td>
<td>34</td>
<td>24</td>
<td>12</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic publications</td>
<td>60</td>
<td>9</td>
<td>99</td>
<td>138</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>13,077</strong></td>
<td><strong>201</strong></td>
<td><strong>321</strong></td>
<td><strong>155</strong></td>
<td><strong>34</strong></td>
<td><strong>328</strong></td>
<td><strong>7</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Across the datasets, seven main themes emerged, which are (1) convict history, (2) Australian history and heritage, (3) visitor experience, (4) natural environment and conservation, (5) buildings/infrastructure, (6) art, and (7) modern-day site usage. These themes serve as the basis for iDoc protostory development as identified interests of the prospective producers and they include intangible cultural heritage, tangible (or built) heritage, and natural heritage. Also accounting for the perspectives covered across datasets, the most-frequent perspective was British, followed by Irish, Aboriginals, and female convicts. There was some mention of Scottish, Welsh, Canadian, American, and convicts from other colonies, as well as free immigrants to Australia. These cultural heritage sites may be of interest to the general tourists, and the level of “mindfulness” in regard to the significance of the sites on behalf of visitors appears to be absent in many datasets (e.g., Instagram, Blogs, TripAdvisor, academic papers, and expert websites). McIntosh and Prentice (1999) argue, that cultural heritage tourists can be distinguished from general tourists because they are “mindful” or sensitive to the context, they actively process information and question what is in contrast to visitors whose experience is situated in a “mindless” state where little understanding
is achieved (p. 44). On-site visitors to the Australian Convict sites may be mindful of and appreciate the convict past, but the UGC datasets also showed that they may lack awareness of UNESCO world heritage site conservation efforts.

This analysis addressed hypothesis 1, which was that are gaps between the cross-media cultural heritage tourism content produced by the tourism industry, subject-matter experts, and the public. The results highlight differences between the corpora rather than gaps because each dataset provides insight into different aspects of the Australian Convict Sites and adds to the macro-narrative of Australian convict history. Therefore, the main value-added in terms of iDoc protostory invention and differences between corpora are summarised. The tourism corpus highlighted interest in Australian Convict Sites with more tourism infrastructure (i.e., Port Arthur, Hyde Park Barracks, and Fremantle Prison), it provided a very broad overview of Australian history with key dates and historical figures, and UNESCO recognition was the highest at 68% across the three datasets. The UGC emphasised positive visitor experiences with tours, nearby attractions and it revealed an interest in artworks as well as the unique features of each Australian Convict Site. UNESCO recognition appeared in 35% of the UGC corpus with “world heritage” being heavily noted in the Instagram dataset, but photos showed people participating in behaviours contrary to conservation measures. The expert-produced corpus focused on individual convicts, their sentences and hard labour, and the effects of convictism on Australian identity. Although, a low percentage of the expert corpus included the mention of UNESCO designation, the terms “world heritage” were widely across academic publications. Therefore, the tourism corpus provided a detailed high-level overview of the Australian Convict Sites and history, the UGC focused on photography, art and positive experiences, and the expert-corpus provided a deeper insight into convictism and its place in Australian history. The findings from the multimodal discourse analysis contributed to the content model, which was based on the narrative topics, content modalities, and perspectives, which inform the layers of narrative that were remixed into protostories for the iDoc.

5.4 The Content Model for the iDoc System

Turning to the documentary genre conventions for creative inspiration to inform the content model, Penz (2012) outlined that the common narrative layers for documentaries about cities are: (1) the story and history of the buildings, (2) the
narratives and points of view of the city planning process, (3) the tales and personal stories embodied by passers-by, and (4) the narrative intentions of the film itself (p. 1). The results of the analysis above highlighted that visitors to the WHS are not only interested in history but also tangible heritage (infrastructure), natural heritage (nature/landscape), and intangible heritage in terms of literary and arts tourism.

Building on the genre conventions of documentaries and as per the goals of this iDoc (see Phase 2 in Chapter 4), the important aspects to include in the iDoc prototype on the Australian Convict Sites were:

1. narrative topics/themes,
2. chronological narrative timeline,
3. perspectives (e.g., cultural groups points of view),
4. characters in the case of this non-fiction narrative are people (i.e., historical figures), and
5. different content modalities and hypermedia.

These aspects served as the overall content model that was used to develop the iDoc protostory layers which were constructed based on the emergent topics and chronological settlement for each WHS, the macro-narrative themes, and perspectives and modalities that emerged from the multimodal discourse analysis (see Table 22).

Table 22. Thematic Protostory Layers (Macro-narrative)

<table>
<thead>
<tr>
<th>Layer</th>
<th>Protostory</th>
<th>Associated corpora</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Natural heritage and sense of place</td>
<td>UGC corpus</td>
</tr>
<tr>
<td>2</td>
<td>Chronology</td>
<td>Tourism corpus</td>
</tr>
<tr>
<td>3</td>
<td>UNESCO designation significance - cultural heritage &amp; history of the site</td>
<td>Tourism and expert-produced corpora</td>
</tr>
<tr>
<td>4</td>
<td>Convict narratives, art/books</td>
<td>UGC and expert-produced corpora</td>
</tr>
<tr>
<td>5</td>
<td>Nearby attractions &amp; modern-day usage of WHS</td>
<td>UGC corpus</td>
</tr>
<tr>
<td>6</td>
<td>Convict life and Australian history &amp; identity</td>
<td>Expert-produced corpus</td>
</tr>
</tbody>
</table>

Based on the findings from the UGC corpus, the first layer highlights the sense of place, including natural heritage to orient produsers with the geo-spatial layout of the Australian Convict Site locations. After viewing this introductory node, two different narrative paths are offered based on the tourism and expert-produced corpora
findings: one path leads to layer 2, which focuses on the settlement’s infrastructure timeline and the second path leads to layer 3, which provides a tour-guide style introduction to the history of the WHS. As previous research shows (McKercher & Du Cros, 2003), tourists prefer primarily to be entertained and secondarily informed, although cultural heritage tourists tend to have an interest in learning more. Therefore, after getting a visuospatial overview of the sites, the layer 3 protostory path provides more information on the significance of UNESCO WHS status (i.e., what makes it special) to situate it into the wider significance of the world history. Layer 4 contains further cultural heritage content and narratives about specific convicts as per the expert-produced corpus and related arts such as artwork and literature/books (e.g., literary and fan tourism) as identified in the UGC corpus. Layer 5 includes the modern-day usage of the sites which also emerged in the UGC corpus and could be of more interest to domestic visitors (as per the user model) who can take advantage of upcoming events in the area, etc. Across these micro-narrative protostory layers specific to each WHS, there is also a macro-narrative theme, layer 6, on convict life and Australian history and identity. Within these 6 layers, the different perspectives identified in the multimodal discourse analysis are employed and provide produser choice (i.e., agency). In order to manage the scope for testing purposes, only the most-common perspectives from the corpora were included in the iDoc prototype (see Table 23). The creative decisions regarding the prototype design and arrangement (phases 5 and 6 respectively) are detailed in the next Chapter.

Table 23. Perspectives Included in iDoc Prototype

<table>
<thead>
<tr>
<th>Number</th>
<th>Narrative perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>British convicts</td>
</tr>
<tr>
<td>2</td>
<td>Aboriginals</td>
</tr>
<tr>
<td>3</td>
<td>Irish convicts</td>
</tr>
<tr>
<td>4</td>
<td>Female convicts</td>
</tr>
<tr>
<td>5</td>
<td>Australian authorities (magistrates, governors, captains, etc.)</td>
</tr>
<tr>
<td>6</td>
<td>Juvenile offenders and New Zealander convicts</td>
</tr>
</tbody>
</table>
Chapter 6: iDoc Creative Practice & Results

“A narrative is never a perfect copy of the world in all of its plenitude, but a particular representation from a point of view, given a significance according to the author’s perspective at a particular historical juncture” (Rosen, 2012, p. 132).

6.1 The Art of the Creative Process

The purpose of the iDoc prototype was not to rewrite history, but to remix it into a new multimodal presentation for open exploration and to persuade viewers to continue investigating what interests them. To achieve this, the iDoc prototype followed a systematic creative process, the key decisions for which are detailed in this chapter as per Phase 5-7 of the theoretical framework, and this is followed by the results of the surveys of selected experts and public user testing. Transmedia narratives and iDocs are usually created by teams of specialists, but this prototype had a single author who collected and remixed narratives from other writers, producers, and creatives so it does not represent a single author’s perspective (as per Phase 5). The IDN creator, (the author of this thesis), is more of a narrative architect or curator, and the creative process was completed to demonstrate the theoretical creation framework in practice. Brooks (2011) analogises the process of narrative construction to “story engineering.” He explains that “like an architect’s vision that yields an engineer’s blueprint, the resulting product may or may not always be everyone’s cup of tea, even if it’s structurally sound. That is the art of it” (Brooks, 2011, p. 13). The theoretical framework (see Chapter 3), user model (see Chapter 4), and content model (see Chapter 5) serve as the narrative infrastructure and blueprints that were applied through creative practice to produce an iDoc prototype designed (Phase 6) for the 11 UNESCO Australian Convict World Heritage Sites, which is titled Sentenced to Transportation: A Virtual Tour of Australia’s Convict Past. This IDN prototype was first pilot tested and revised (Phase 7) before being tested by two user groups, one group of selected experts on Australian convict history and the other group was members of the public (e.g., tourists or potential tourists). The following sections detail the creative decisions made based on the theoretical framework and the findings on
the applicability of a multimodal discourse analysis, as conducted in Chapter 5, as a new method of remixed narrative invention.

### 6.1.1 Remixing the Protostories in Klynt

Rather than beginning with a paper-based creation strategy that risks falling into the conventions of a linear narrative structure, the iDoc protostories were created as a digital-born narrative directly in the authoring software, Klynt, which is described in more detail below in Phase 6 – Design. Creating the narrative directly in a digital system posed the challenge of where to begin. For instance, starting with a homepage or at the beginning of the narrative may have resulted in predetermined linear story paths and overly-directive entry points that would not provide the produsers with the desired level of agency to choose different narrative paths (i.e., protostories). To avoid this situation, a bottom-up approach was employed to construct the protostories by starting with the micro-narratives for each of the 11 WHS, which had topical connections (i.e., node links) that organically formed the macro-narrative structure. In other words, the macro-narrative on the theme of Australian convictism and identity emerged from the protostory connections rather than being directed by the iDoc creator’s (i.e., author of this thesis) interests.

Looking to the content available to begin remixing from the bottom-up, the multimodal discourse analysis highlighted the amount of existing information for each site (e.g., the Old North Road had the least amount of content, while Port Arthur and Fremantle Prison had the most existing content). The sites were then arranged into two lists, the first list was ordered from the least amount of content to the most and then compared with a second list of the sites in chronological order based on the year each settlement was established. The more remote locations, which had less available existing content, are also older and smaller settlements. Therefore, the protostory nodes were developed in Klynt for each WHS based on a back-and-forth balance between the chronological order, amount of existing content, and geo-location, moving from Norfolk to Western Australia and then back to New South Wales and finally Tasmania. The chronological timeline and geo-locations act as the common storyworld boundaries. Without these anchors, the creation process would have been too flexible, posed too many possibilities, and lacked a baseline narrative thread from which to connect the micro-narratives back to the macro-narrative. These factors taken into account, the resulting order of protostory creation was as follows:
1. Kingston and Arthur’s Vale, Norfolk Island (1788-1855)
2. Fremantle Prison, Perth, Western Australia (1855-1991)
3. Old Government House and Domain, New South Wales (NSW) (1800-1847)
4. Hyde Park Barracks, NSW (1811-1848 for convicts)
5. Old Great North Road, NSW (1825-1836)
6. Cockatoo Island, NSW (1839-1869)
7. Brickendon (1824/29) and Woolmers Estate (1817), Longford, Tasmania
8. Darlington Probation Station, Maria Island, Tasmania (1825-1832)
9. Cascades Female Factory, Hobart, Tasmania (1828-1856)
10. Port Arthur Historic Site, Tasman Peninsula (1830-1853)
11. Coal Mines Historic Site, Tasman Peninsula (1833-1848)

As one of the communication goals is to incorporate many different content modalities, the protostories were created starting with the collected media, which were semantically connected and supplemented with new on-screen text and voice-over scripts written by the iDoc creator (for an overview of modalities used see Table 24). In terms of the artistic and rhetorical techniques used, the modalities were chosen for a variety of reasons. Firstly, in some cases the modality may have been the only available source of existing content, secondly in order to reinforce the narrative argument (logos), or to elicit an emotional (pathos) reaction from produsers. For example, “music provides an experiential, emotional character to the spectator’s experience, and thus supports the preferred interpretation of the film’s voice” (Plantinga, 1997, p. 166). Music contributes to the persuasive nature of the rhetoric and was selected for each WHS based on the level of dark tourism communicated in the three corpora analysed in Chapter 5 and the on-site experience during fieldwork visits to the Australian Convict Sites.
Table 24. Modalities and Media Appearing in Klynt

<table>
<thead>
<tr>
<th>Number</th>
<th>Modality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Digital (modern) photography (UGC)</td>
</tr>
<tr>
<td>2</td>
<td>Historical portraits and photos</td>
</tr>
<tr>
<td>3</td>
<td>Video (UGC)</td>
</tr>
<tr>
<td>4</td>
<td>Audio: Voice-over and podcasts</td>
</tr>
<tr>
<td>5</td>
<td>Music</td>
</tr>
<tr>
<td>6</td>
<td>Interactive timelines (i.e., key dates)</td>
</tr>
<tr>
<td>7</td>
<td>Text and hyperlinks</td>
</tr>
<tr>
<td>8</td>
<td>Artworks</td>
</tr>
<tr>
<td>9</td>
<td>Maps (e.g., archaeological sites, blueprints)</td>
</tr>
<tr>
<td>10</td>
<td>Poems and books</td>
</tr>
<tr>
<td>11</td>
<td>Mobile apps</td>
</tr>
<tr>
<td>12</td>
<td>Animations and 3D visualisations</td>
</tr>
</tbody>
</table>

6.1.2 Creative Commons and Copyrighted Material

The media was primarily sourced from Creative Commons licensed images and videos and publicly available heritage material from GLAMs, such as: the State Library of NSW; Libraries Tasmania; Hyde Park Barracks Museum; Female Convicts Research Centre; National Archives of Ireland’s Australian Transportation Database; and Digital Panopticon. These are not the only sources drawn upon, but represent the most frequently used sources. When copyright-free material was not readily available, other copyrighted material was used for academic research purposes as per the Copyright Association of Ireland’s (the country in which this thesis research was conducted) principles of “fair use”:

A work may be used by anyone for the purposes of research or private study without the permission of the author, provided the use is conducted in a way which does not prejudice the rights of the copyright owner. The work may also be used for criticism or review or for reporting current events, with the same proviso, and provided further that the use of the work is accompanied by an acknowledgement identifying the author and title of the work (Fair dealing, 2020).

Since some copyrighted material was incorporated into the iDoc prototype, it was accessible behind the protection of a web page with a Research Consent Form for survey participants—one for selected experts and one for public participants (see Appendices 6 and 7). The iDoc was published at nicolebasaraba.com for a duration of
four weeks while the pilot, expert, and user testing took place between January 27 – February 19, 2020 after which time, access was removed. The *Sentenced to Transportation: A Virtual Tour of Australia’s Convict Past* remains archived and available for reference (rather than public distribution/consumption) at nicolebasarba.com/Australian-convicts-prototype.

**6.1.3 Aboriginal Cultural Content Sensitivity and Inclusion**

Prior to beginning the protostory construction process, Aboriginal content warnings were observed during on-site visits to the WHS in Australia. In Australia, Indigenous heritage comprises all objects, sites and knowledge transmitted from generation to generation. Indigenous people have a living heritage. Their connection with the land, water, animals, plants and other people is an expression of cultural heritage. Writing, music, performing arts, visual arts and media arts, are some of the mediums for transmitting Indigenous cultural heritage (Australian Council for the Arts, 2012, p. 2).

Realising the cultural sensitives and importance of these content warnings, the Australian Council for the Arts’ protocol regarding the use and expression of Indigenous culture was adhered to within the iDoc. Summarising the recommendations on the distribution and inclusion of Aboriginal and Torres Strait Islander content, the Australian Broadcasting Company (ABC) states that the term *Aborigines* is considered offensive to many Indigenous Australians and thus, it was not included in the iDoc (ABC, 2015). When content with identifiers of Aboriginal persons in the form of a photo, name, or voice were used, a content warning was provided (ABC, 2015). When it is was unclear if the person was deceased, a content warning was provided as follows: “Aboriginal and Torres Strait Islander people should be aware that this website may contain images, voices or names of deceased persons in photographs, film, audio recordings or printed material” (ABC, 2015).

In addition to this, the 11 Australian Convict Sites were checked for possible overlaps with registered Aboriginal Places. The NSW Government website (2019) was consulted and it clarified that the five WHS located in NSW were not associated with Aboriginal Places; similarly the Tasmanian Government (2019) websites showed that the five convict WHS were not associated with Aboriginal Historical places; and the Government of WA (2019) also showed no overlap with the Fremantle Prison WHS. However, the Government of Australia (2019) website showed that the Kingston and
Arthur’s Vale (KAVHA) is officially recognised as being previously inhabited by Early Polynesians between AD 1200 and AD 1600. The Indigenous history for each site was included in the protostories to pay respect to the Elders of past and present, and it is also culturally important to Australians of the present day as was observed during on-site fieldwork. Thus, the opening sequence of the iDoc reads:

Welcome to country.\textsuperscript{118} Australia, the traditional custodians of this land are acknowledged, and respects are paid to all Elders, past and present.

6.2 Phase 5: Arrangement of Narrative Layers

The arrangement phase involved determining: (1) how the protostory topics should be grouped, (2) the rules by which texts appear (e.g., which modalities and how they can be accessed), and (3) the overall narrative structure of the IDN system. Before the protostories were designed fully within the software, a wireframe was arranged to provide a narrative structure that showcases the different perspectives to provide users with choices to personalise their experience. As per the content model outlined at the end of the previous chapter (see Table 22), the iDoc needs six protostory layers to encompass the thematic interests expressed across the three corpora analysed. Using these narrative layers as a basis for the protostory wireframe, these core components were arranged for each of the 11 Australian Convict Sites into: (1) a visual introduction to the natural landscape, (2) a settlement timeline focused on buildings and infrastructure, (3) explanation of the UNESCO WHS’s cultural heritage significance and the history of the site, (4) a few notable historical figures, and (5) information about modern-day usage of the site and nearby attractions. The six and final narrative layer was the macro-narrative on the topics of convict life and Australian identity. This layer as well as the perspectives that emerged from the multimodal discourse analysis (i.e., Aboriginal, female, Irish, etc.) were organically included as narrative branches connected to the Australian Convict Site’s history as covered in layers three and four on the historical significance and figures. In other words, the sixth narrative layer and perspectives were not wireframed for each Australian Convict Site, but emerged from the bottom-up process of protostory creation.

\textsuperscript{118} Note: “Welcome to country” is grammatically correct because Australia is (in an anglicized simplification of the complex cultural understanding) recognised in a personified sense as an entity by Indigenous Australians.
The iDoc aims to achieve a level four interactivity, where the emergent narrative results from user interaction with the system (Ryan, 2015). Ryan’s (2015) Action Space narrative structure (as discussed in Chapter 2) is theoretically suited to this iDoc because “interactivity takes place on the macro-level and the narrative plotting on the micro-level” (Ryan, 2015, p. 174). The Action Space “abandons the idea of an overarching dramatic narrative in favour of an epic structure of semi-autonomous episodes” and the visitors can wander through “distinct sub worlds [sic], each of which offers a different, carefully scripted adventure” (Ryan, 2015, p. 175). The sub-worlds of micro-narratives in the iDoc are the individual WHS, which are connected to the larger macro-narrative of the transportation of convicts to Australia. The iDoc was titled *Transportation to Australia: A Virtual Tour of Australia’s Convict Past* to expresses the rhetorical goal of providing produsers with the agency to explore the WHS in the order they desire and it presents thematic narrativity about Australia’s convict history rather than as a linear story. As Ryan (2002) explains, the narratives of a life or community are not one epic narrative, but are made up of smaller episodes that can be read in different orders. Ryan (2002) suggests projects that explore local history, or preserve cultural memory lend themselves well to the non-linear browsing navigation of the Action Space structure (p. 606). An Action Space “represents the geography of the virtual world, and the nodes and links correspond to the prominent sites and access ways in this geography” (Ryan, 2015, p. 174). Here Ryan (2015) draws a metaphorical parallel between the virtual space and physical geography, which also fits well with this cultural heritage IDN because it has 11 locations and the aim is to bring the physical world of the Australian Convict Sites into the digital world. Each node in the iDoc acts as a separate micro-narrative that can be experienced by the produser, who can then navigate to another node at any time. The affordance of the Action Space narrative structure is that the micro-stories (nodes) can be predetermined within a more flexible macro-narrative structure and it provides the produser with the agency to make choices and navigate through the system to produce an emergent narrative. This level of interactivity involves procedural rhetoric that allows for a personalised narrative while maintaining narrative consistency on a macro-level. One challenge with the Action Space structure is that it has no clear starting point and

---

119 The term node is used to describe a piece of narrative content (i.e., scene/film sequence) built in the Klynt software.
because the iDoc prototype is web-based, a “homepage” or main entry point into the protostories (i.e., micro-narratives) was required.

In order to address this medium-centric requirement of website interfaces, the narrative structures commonly used in web documentaries were reviewed (as seen in Chapter 2). Munday (2018) discusses the Concentric narrative structure as an option for web documentaries whereby the narratives orbit around a shared central point and it contains multiple entry points into the different protostories (see Image 22). Munday (2018) explains that the structure provides user freedom and interactivity but this is accompanied by the loss of authorial control over which content is viewed and in which order and thus users might not get the same “journey experience” that other structures provide. He notes that viewers can choose whichever path they desire, but they end up back at the core area (Munday, 2018). However, the goal of the iDoc prototype of the Australian Convict Sites is not to redirect produsers back to the beginning (i.e., homepage) after each protostory, but to facilitate the emergence of multiple different personalised narratives with the endpoint determined by the user who can choose to stop their interaction by leaving the website, or in the case of this prototype by clicking on the “Take Survey” button. In terms of the flow of produser interaction along the narrative pathways, they have many options to navigate within the Concentric narrative structure. For instance, when they select a protostory path, they could end up in another protostory path based on hyperlinks to related content, they may choose to select to one of the multiple menu options provided, and/or refer to the default non-hierarchical map menu to select a different WHS. Regardless of which protostory is chosen, they are not designed to bring the produser to the same ending, and thus, this incorporates the Action Space structure which circles around the selected protostory or links to other protostory pathways. Therefore, the iDoc prototype was arranged using a bottom-up approach with unconnected micro-narratives (i.e., 11 WHS) built out first based on the wireframed narrative layers, which were then organically connected through semantic narrative meanings that emerged because the possible connections between the Australian Convict Sites were not known in advance. The resulting overall narrative structure was a combination of the Action Space and Concentric structures (see Image 23).
As can be seen in the iDoc’s final narrative structure (Image 23), the wireframe had 12 protostory paths and followed the Concentric Action Space structure. It also had a central “homepage,” as per the Concentric Structure, from which all the micro-narratives were connected. The protostory nodes were then clustered in the wireframe according to geographic location as noted by the different colour coding. The WHS in yellow are those in NSW, in red are those in the Tasmania, pink is Norfolk Island, and blue is for Western Australia. The green nodes represent the larger macro-narrative themes of Australian identity of convict life that emerged from the multimodal
discourse analysis. The burgundy colour represents the nodes that contain content that leads to transmedia narrative expansions beyond the scope of the Australian Convict Sites. For example, the burgundy nodes include content, such as hyperlinks to related novels, mobile applications, and heritage sites related to Australian convict history.

The homepage or first node of the iDoc (see Image 24) introduces the historical narrative of transportation through a video and provides text-based instructions via an icon (“i”) indicating information that opens an overlaid window describing the navigation options. The primary navigation menu is an interactive geotagged Google Map of the 11 UNESCO WHS (see Image 25). As a secondary option, produsers were also provided with a more traditional “text menu” with the names of the 11 Australian Convict Sites appearing is a clickable button for entry to each site (see Image 26). A third menu (entry-point) into was provided through the curated “stories” buttons appearing in the footer menu. After selecting a specific site or a “stories” menu option, produsers were given choices to navigate across different story paths. The first layer begins with a geographic overview for each WHS and then each protostory offers five main story paths: (1) timelines of the site’s infrastructure using TimelineJS; (2) the historical different phases of settlement at each site (see Image 27); (3) selected anecdotes from historical figures and their lives on-site (e.g., authorities and convicts) (see Image 28); (4) related nearby tourist attractions (see Image 30); and (5) transmedia extensions (e.g., books, mobile apps, etc) (see Image 31). These story paths served as the foundation upon which the narrative structure was created by forming semantic connections between Australian Convict Sites from the bottom-up.
Image 26. Text-based iDoc Menu (Sentenced to Transportation, 2020)

Image 27. Sample TimelineJS for Fremantle Prison, WA (Sentenced to Transportation, 2020)

Image 28. Sample Story Node for Settlement History of Norfolk Island (Sentenced to Transportation, 2020)

Image 29. Sample of Person Profile - Convict Catherine Bartley, Cascades Female Factory, Tasmania (Sentenced to Transportation, 2020)

Image 30. Sample of Nearby Attractions for Hyde Park Barracks Museum, NSW (Sentenced to Transportation, 2020)

Image 31. Sample of Transmedia Extension - Mobile App for the Old Great North Road, NSW (Sentenced to Transportation, 2020)
The content for each protostory was created using the following steps based on the results of the multimodal discourse analysis (Chapter 4):

1. Locate drone video to provide a visual overview of the WHS
2. Identify key content topics for each site,
3. Establish a chronological outline,
4. Download/curate additional multimodal content from gathered resources and databases,
5. Determine the mood of the location based on on-site fieldwork and level of dark tourism identified from the analysed corpora,
6. Identify prominent historical figures and perspectives associated with the site (as per the corpora),
7. Create hyperlinks to develop protostory paths, and
8. Include external hyperlinks to further resources/narratives.

Through this creative process for each WHS, the macro-narrative on the theme of Australian identity was connected as represented by the green-coloured nodes (see Image 23). Additional text-based menus tabs (in the footer) were created to represent the perspectives of female convicts, Irish convicts, Indigenous, and Convict Life. However, as previously mentioned, not all perspectives could be represented and built out in the prototype version. Also as per the quote that opened this Chapter, this iDoc prototype was not intended to fully encompass the entire narrative of Australian convict history or of the 11 UNESCO WHS, but to demonstrate how different modalities and sources of content can be remixed into a complex IDN that offers different layers and perspectives for produsers to explore. Therefore, while all efforts have been made to ensure, at minimum, a birds-eye overview of each WHS, there are more content pieces that could be added and areas of this history that still need to be uncovered and investigated by researchers. The iDoc prototype creation thus also highlighted possibilities for future narrative expansion, which is addressed in the results section (see section 6.5).

6.3 Phase 6: Designing the IDN System

The design phase was influenced by the modalities of content gathered during the invention phase (e.g., text, images, video, etc.), the narrative arrangement, and selected authoring software. The focus of the design was to represent the physical
geographic space of the 11 Australian Convict Sites in the digital space for produser exploration in the form of a ludonarrative experience.

6.3.1 The Interface Design: Creating A Sense of Place

The creative decisions regarding the iDoc’s interface design were informed by the review of various IDN genres (see Chapter 2). For example, many video games have successfully included maps to aid players in navigating the game world. In the context of video games, Punday (2017) explains that “orienting spaces” provide a context for the “primary spaces” of gameplay by “allowing the player to choose missions, helping the reader see a larger world that connects the various primary spaces, or by providing a thematic or artistic framework for understanding the events in the primary space” (p. 98-99). He argues that this “dual space model” allows readers to do different things within the primary space of the story (Punday, 2017, p. 107). Since other IDNs, such as video games, have incorporated immersive navigation options, multiple interfaces were designed for the iDoc in order to communicate the different narrative layers.

The primary driver of the iDoc was the map-based navigation of the 11 geographic locations of the Australian Convict Sites. The design thinking behind this choice was that the map would situate and immerse produsers into the geographic locations and promote agency by presenting different entry points into the multiple micro-narratives without a hierarchy or linear narrative path directing the produser’s choice. As the TripAdvisor results showed, the “sense of place” was an important theme in the WHS visitors’ reviews. Research on navigating digital and physical spaces supports the creative choice to have a map menu navigation. For example, Tuan distinguishes between space and place where space is understood “experientially, through our real or imagined movement from one place to another” and places are the “pausing points that capture our attention within a space” (as cited in Murray, 2012, p. 172). By virtually creating a “sense of place” using a map as a digital navigation menu, the iDoc allows cultural heritage tourists to navigate the virtual space and in turn could aid their navigation of the physical space if they visited the 11 sites (i.e., places) in person. Murray (2012) argues that in the digital medium, “navigating to a place can itself be a rich experience if it is framed as an exploration rewarded with surprising

---

120 This would be a possible future research question for additional user testing studies with this iDoc prototype.
discoveries” (p. 174). A geographical interface also makes use of the digital medium’s affordance of incorporating multimodal content to deliver information quicker than text-based descriptions. For example, “computer-based maps can accommodate enormous details, which can be displayed in multiple configurations and granularity” (Murray, 2012, p. 170). Furthermore, spatial navigation through virtual landscapes is one form of digital agency that “can be pleasurable in itself, independent of the content of the spaces” (Murray, 1997, p. 128). Thus, the user interface was designed to allow for produser agency to virtually explore the 11 Australian Convict Sites while making use of the spatial and encyclopaedic affordances of digital medium.

The map navigation also functioned as the macro-narrative orienting space for the Australian convict sites, replacing a standard web “homepage” and Tree narrative structure (i.e. hierarchical), to bring produsers into the spaces that would contain the micro-narratives (i.e., episodes in the Action Space model). The text-based menu of the 11 WHS was provided along with text-based footer menu to test whether produsers preferred this navigation option because it emulates a tree-like website menu and many produsers may not be familiar with iDocs as a genre nor with a map-based navigation menu. The other footer menu buttons reflected the perspectives and themes of Female stories, Irish stories, Aboriginal stories and Convict life. In addition to the produsers unfamiliarity with the iDoc genre and a map-style menu, Punday (2017) argues that produsers need more context to understand the full meaning and “need to be given much more explicit guidance on how to manipulate the work” (p. 107). For this reason, more explicit navigation instructions were given within the micro-narratives. For example, the information icon provided text-based instructions on all the possible navigation options for the iDoc, and one-sentence directions appeared at the end of each node (e.g., “To continue, select the button, right arrow, or choose a button below”). The multiple navigation options allowed for multiple perspectives to be presented simultaneously, the map remediated the physical world in the digital world, and maximised the communicative capacity of the digital screen’s real estate.

6.3.2 Colour Scheme and Font Selection: WHS Branding

In addition to reviewing the media gathered for each convict site during the multimodal discourse analysis, the colours used within the iDoc were considered as part of the design phase. Since colour can add meaning/logic to the narrative navigation, one of the first steps before the protostories were created was determining
the overall colour pallet. Referring back to Krisjanous’ (2016) research on dark tourism websites, the common aesthetic involves dark colours; formal font often in black; landscape/building photography with no people; muted colours and sepia tones to signify distance from the present; and more white space between text or imagery. Since, the primary audience of the iDoc prototype is cultural heritage tourists rather than specifically dark tourists, dark colours (e.g., deep turquoise and red) were reserved mostly for Australian Convict Sites that had darker narratives, a white font was chosen to lighten the mood, and the landscape and building photography was mostly without people, but some included people. These design choices aimed to achieve a medium-level of dark tourism.

The PASHMA websites and printed brochures used Quicksand font for the headings and Segoe font for body text. Other Australian Convict Site websites had fonts such as Source Sans, Roboto and Helvetica Neue, which are common across many web texts. Therefore, to retain the partially established branding and styling across the convict sites, the PASHMA font style, Quicksand, was applied for heading levels 1 and 2 and Open Sans for the body text. The results from the multimodal discourse analysis showed that there is no unified colour scheme for all 11 Australian Convict Sites, but common colour schemes for the PASHMA brochures included sepia tones, dusty pink, purple and dark red (see Image 8. Australian Convict Sites Brochures’ Colour Branding). A similar colour scheme was also used on the PASHMA and other Australian Convict Sites’ websites (e.g., Fremantle Prison and Encounter Maria Island). For this reason, sepia tones were selected (primarily beige and dusty rose) as the main branding colours for the iDoc and in order to elicit some distance from the present (as per Krisjanous, 2016). Sepia tones are associated with history as documents and archives are often yellowed from ageing processes and metal objects can rust. For example, the 11 Australian Convict Sites have a UNESCO plaque at the entrance to each location which features iron bars that are, and will increasingly become, rusted from weathering. Therefore, this muted and natural colour palette was chosen because it would also not contrast too starkly with any embedded images of archival material and on-site photography that were used in the design. Since the multimodal discourse analysis showed that some Australian Convict Sites focus more on dark tourism, history, or natural heritage, this was mirrored in the interface design choices for each site. Finally, these aesthetic choices of the prototyped iDoc could fit
into the branded marketing content for the Australian Convict Sites and provide a visual transmedia connection between the media produced by different content providers.

6.3.3 Button Styles

Klynt provides some default styling in terms of the appearance of the footer menu, which is small and dark grey, and some of the navigation buttons. The default styling of the buttons was used because it was transparent with white font and white outline so that the background content is visible (e.g., images or video). The hover action\textsuperscript{121} colours were edited to the selected colour palette (sepia and dusty pink). The external links (e.g., “Learn more” buttons) appear in sepia colour and open in a new window for additional content outside the iDoc system (see Image 32). The buttons that take the produser to content within the iDoc were changed to a dusty rose colour when the user hovers over the transparent button. The arrow buttons allow the produser to continue forward or go back linearly and were applied with the default transparent styling and the hover action colour was also changed to dusty pink (see Image 33). When produsers chose to explore the infrastructure timeline of the Australian Convict Site, such as Fremantle Prison, they were presented with an image of the Site which acted as a visual menu with a series of buttons that linked to each building (see Image 34). After produsers made a selection, such as “Prison,” they could navigate back to this visual menu of button options by clicking on the hamburger menu icon located in the top-left corner of the page (i.e., the three horizontal stacked white lines) (see Image 35).

\textsuperscript{121} A hover action is when the user places the mouse overtop a button and it changes in appearance, usually colour, to visually signal to the user that it is a clickable link.
Image 32. Dog Line - Tasman Peninsula Node Showing Learn More Button *(Sentenced to Transportation, 2020)*

A natural gateway measuring 400 meters long and less than 30 meters wide separates the Tasman Peninsula from the remainder of Tasmania. To deter convicts from escaping Port Arthur along Eaglehawkneck, a line of vicious dogs, wooden barrel doghouses, and oil lamps were stationed from 1831-1870s when the penal settlement was closed. The Dog Line was monitored by officers stationed in the nearby Officer’s Quarters.

Image 33. Port Arthur Story Node Showing Navigation Buttons *(Sentenced to Transportation, 2020)*
6.3.4 Tone and Genre Conventions

Documentaries commonly use voice-over narration and cinematic moving images to make key arguments. The tone of the voice-over narration in film documentaries is conventionally serious and educational. Research on cultural heritage...
mobile applications (Basaraba et al., 2019) showed that textual information was largely presented in a formal, educational tone, but that some applications that took a more story-focused approach using a more informal tone as was seen on the travel blogs in the multimodal discourse analysis. Therefore, the tone adopted for the iDoc voice-overs aimed to combine an informative and casual tone with an educational tour-guide type style. The tone also targets a medium level of dark tourism and seriousness. This tone is best exemplified in the Cascades Female Factory, where the content was heavily edited to fit the tour-guide tone (Sentenced to Transportation, 2020).

6.3.5 On-site Fieldwork Research: Photography and Music Choices

During on-site research conducted in February 2019, eight of the 11 UNESCO WHS were visited. On-site visits also permitted a first-hand documentation of the sites. Information gathered during these visits included the printed brochures analysed in Chapter 4, intangible heritage narratives communicated orally by Australian academics and on-site tour guides, and photos. The photos taken on-site were used in the iDoc as they are copyright free and because some sites do not have photos with Creative Commons licencing readily available online. Furthermore, photos of the on-site signage also contributed to the narrative content (e.g., text and voice-over narration) since the sites were only designated in 2010 and narratives and scholarly publications on Australia’s convict heritage are still emerging. Another key intangible finding from the on-site visits was the ability to feel the pathos or emotions elicited from the experience. Some sites are darker and eerie due to their location, on-site narratives, and presence of or lack of tourism infrastructure. The feelings from the on-site visits contributed to the creative choices made in regard to the music selected and the imagery used to achieve the varying levels of dark tourism expressed in the iDoc for each of the WHS. The copyright-free music selected was sourced from YouTube’s Audio Library.

The creative process of designing the iDoc prototype was completed in a 14-week period directly in Klynt. The first iteration of the iDoc prototype then needed to be pilot tested to determine if any revisions were required before the formal evaluation was conducted.
6.4 Phase 7: Revising the Prototyped IDN

6.4.1 Ethics Approval and Survey Design

Once the iDoc prototype was complete, the Klynt files were exported and uploaded to the FTP of the hosting website (nicolebasaraba.com/Australian-convicts-prototype). Prior to user testing, two evaluation surveys were developed: one for selected experts and one for public users (see Appendices 6 and 7). The surveys and experiment design were approved by the Ethics Committee for Trinity College Dublin’s School of Languages, Literatures, and Cultures. Two web pages were created, one which was password-protected so that only selected experts could access the web page (nicolebasaraba.com/selected-experts) and one that was open to the public for user testing (nicolebasaraba.com/iDoc-research). These web pages each had the respective research consent form as approved by the ethics committee (see Appendices 6 and 7). After providing their consent via email, the iDoc prototype launched and a copy of the consent form was automatically sent to the email address they provided. After the users were finished exploring, they could end the experience either by clicking on the “Take survey” button in the top-right corner or the footer menu hyperlink labelled “Take survey.” The survey data were collected using Qualtrics software, which is an enterprise-level electronic survey software licensed to students of Trinity College Dublin.

Previous research was consulted to help develop the user experience survey as there are several existing standardised user experience questionnaires. The System Usability Scale (SUS) questions were incorporated into the user testing survey because they have been validated by many researchers. The 10 SUS questions were edited only by replacing the word “system” with “iDoc.” Zhu (2012) argued that computational narrative systems need to be empirically evaluated not only on quantitative results but with an adequate focus on qualitative results because quantitative survey questions “assume a task-based philosophy” rather than user perception and interpretation of their experience with the system (p. 153). Scholars have noted a major conflict between artistic and HCI perspectives on user interaction because art is inherently subjective and HCI aims to be objective (Höök, Sengers, & Ansersson 2003; Zhu, 2012). Thus, Zhu (2012) argues that authorial intention should play a role in evaluating the effectiveness of the narratives because, for example, “a users’ report of
unpleasantness may be positive or even desirable, if the system author intends to use her stories to challenge the reader’s belief system” (p. 152). The user survey questions were posed under the predetermined communication goals of the iDoc, which were to collect the audience’s (i.e., survey participants) demographics and interests, determine their preferences in regard to multimodal content and navigational options, and see whether the experience inspired them to take further action (i.e., participate). The survey results were obtained in order to determine whether the iDoc provided produsers with the desired agency to navigate through and participate in narrative creation (ethos), their experience with the narrative content (pathos), and whether they were persuaded to take further action as a result of interacting with the iDoc (logos).

In terms of the experts’ survey design, the questions were developed based on the desired feedback and their subject-matter knowledge of Australian convict history. The desired sample size of the expert group was 5-10 based on responses from direct emails sent to a selected group of 16. The experts’ survey was disseminated to test whether the integrity of the history was maintained in the remix (considering the iDoc creator does not have a background in Australian history) and to gather their impressions of the overall suitability of the iDoc genre for this type of cultural heritage narrative.

The targeted sample size for the user group (i.e., potential cultural heritage tourists) from the public was a minimum of 30 respondents based on empirical rationale that statistical simulation studies have shown that “the distribution of the mean becomes near normal when \( n = 30 \)” (Sauro & Lewis, 2012, p. 246). The user testing participants were crowdsourced from email lists operated by Trinity College Dublin; targeted networks/communities interested in iDocs, interactive narratives, Irish and Australian history; and through social media posts on Twitter and Facebook and other targeted personal networks located across Australia, America, Europe and Canada. The results from user modelling in Phase 1 (see Chapter 5) showed most UNESCO WHS visitors were domestic rather than international visitors, thus, Australians were targeted by using hashtags identified in the multimodal discourse analysis (Chapter 4) during peak social media use hours on Australian Eastern Daylight Time (GMT+11) and a question on country of birth was included in the user testing.

---

122 Experts included scholars with PhDs in the areas of Australian history, British history, Indigenous history, criminal punishment systems, cultural studies, and archaeology.
survey to identify domestic tourists. A second key factor in the user model was tourists’ interests or motivations for visiting a place and therefore, a question pertaining to the user’s primary travel interest was included to classify them as a cultural heritage tourist or more general tourist. The goal of the user testing was not to get a statistically representative sample because the primary purpose was to gain qualitative feedback on the iDoc and qualitative studies often involve fewer than 50 participants. Due to challenges in finding volunteer (rather than paid or otherwise incentivised) participants for this study, approximately 11-12 respondents were recruited from a cohort of second-year undergraduate students taking science, technology, engineering and mathematics courses at Trinity College Dublin. Prior to launching the expert and public user surveys, pilot tests were conducted with the iDoc prototype experience for both surveys.

6.4.2 Pre-Launch Pilot Testing and Minor Revisions

The pilot tests highlighted some issues with UX design due to the built-in responsiveness features within the Klynt software. To address the various issues with browser scaling, the design view was optimised for a standard screen size of 1366 by 768 pixels and recommended viewing instructions were added to the Research Consent Form as well as the instructions node of the iDoc, which appears on the homepage and was added to the first landing nodes for each WHS. The other minor edits to the iDoc design included the removal of the overlay feature in Klynt which interrupted the produser experience because multimodal content, such as the music or voice-overs, were paused and some navigation buttons in the overlaid pop-up sat on top of different buttons in the original node, which made it difficult to read the button text. However, the user responses from the pilot survey showed that the questions were generating usable data and addressed the research questions and hypotheses. A few minor edits were made to the questions to improve language clarity without changing the meaning of the question. After the pilot tests were completed and minor adjustments made both to the iDoc and the respective surveys, the experiment was deployed to the target user groups (1) selected experts and (2) public users. The results of the surveys also highlighted possible future revisions for this prototype and future iDocs, which are

---

123 Since the survey data were anonymous, the exact number of participants from the cohort cannot be identified as the survey was live and open to participants including those targeted through social media (e.g., Twitter) and email distribution lists.
discussed at the end of this Chapter, pertaining to Phase 7 of the theoretical creation framework.

6.5 Proof of Concept: Results of the Surveys

6.5.1 Expert Survey Results

6.5.1.1 Length of engagement

Of the sample of experts selected to review the iDoc, 50% responded (a total of 6). Each expert was requested to review a section of the iDoc that pertained to their respective knowledge area, but 50% of respondents choose to explore all sections including both the pin marked WHS locations on the map menu and the additional tabs on the footer menu. Two respondents spent 5-10 minutes, three spent 20-30 minutes, and one who spent over two hours wrote:

I really enjoyed taking your digital tour of transportation. I sat down at 7pm, it's now 9!!! It literally "transported" me back to my PhD and research trips to Tasmania. [...] So I'd like to congratulate you on this piece of digital cultural/dark tourism (Dr. Bláthnaid Nolan, personal communication, January 27, 2020).

The amount of time spent exploring the iDoc was lengthy compared to most website visitors. For example, users of YouTube (for video consumption) spend an average of 12 minutes and 13 seconds per day and users of Wikipedia.org (the most popular text-based website with content about specific topics) spend 3 minutes and 54 seconds (Alexa, 2020). Therefore, the experts chose to spend more time exploring the iDoc than the average user spends on the most popular video streaming website. Direct emails and other social media responses (e.g., 19 retweets, and 14 likes and shares combined from Facebook and LinkedIn) also expressed a very positive impression of the iDoc (see Images 36-38). The majority of experts (90%) thought that the iDoc provided an accurate overview of Australian convict history for a lay audience. In response to this survey question, one expert noted: “Absolutely. I reckon a lay audience would find it informative. I found it informative, and I am not lay” (Dr. Richard Tuffin, University of New England, Australia). Another respondent, who elected to remain unnamed wrote, “as an audience member I was aware of all the paths not taken and buttons not clicked, I think it felt like there was a lot of information
there.” Evidently, although the expert respondent group was small, they were able to confirm that enough historical content was included in an accessible manner.

**Image 36. Retweet dated January 27, 2020**

Dr Emma D. Watkins @emmawatkins · Jan 27
Fantastic resource, in and of itself, and also the chance to contribute to what looks to be a great PhD. Take a look!

Nicole Basaraba @NicoleBasaraba · Jan 27
Considering a visit to Australia? Support academic research by viewing this #iDoc & completing the survey! #visitaustralia #firstfleet nicolebasaraba.com/doc-research/

**Image 37. Twitter Retweets dated January 31, 2020**

History Council of NSW and K. White Retweeted your Tweet
Take a virtual tour of Australian history. Support academic research by viewing this #iDoc & completing the survey! #digitalhumanities pic.twitter.com/nnfu4TkpnG

History Council of NSW and Alexandra Nusser liked your Tweet
Take a virtual tour of Australian history. Support academic research by viewing this #iDoc & completing the survey! #digitalhumanities pic.twitter.com/nnfu4TkpnG

**Image 38. Twitter Responses dated February 5, 2020**

Reto Steffen liked your Tweet
The @i_Docs community may like to explore this #iDoc on Australian convicts & take the 10-min post-interaction survey to contribute to PhD research #transmedia nicolebasaraba.com/doc-research/ pic.twitter.com/vfxHBPnBF

Jane Lydon and 3 others Retweeted your Tweet
Many females suffering from the Irish Famine were transported to Australia. Explore this web documentary & take the 10-min post-interaction survey to hear the stories of these #EPICwomen & #herstory nicolebasaraba.com/doc-research/ pic.twitter.com/Hi0ZmeO73d
6.5.1.2 Perspectives and pathos

In terms of the perspectives included and providing a representative picture of convict history, the experts noted that the inclusion of Indigenous and women’s stories provided important insight into their “lived experience,” and were “not done superficially.” The experts also noted that narratives about the daily life of convicts beyond their punishment were “well documented.” Three experts noted that no account of history is unbiased, but they felt the multiple perspectives included added value. One expert explained:

for example the music used on the flying overviews of Old Government House at Parramatta was quite jaunty and victorious, which seemed to me to be suggesting a kind of majesty to the site, which speaks to those themes of colonisation around progress/British culture/administrative prowess, and does not speak to those ideas about the site around dispossession of Aboriginal land and culture, nor the aspects of the convict system or experience that were less jaunty. BUT whatever music was chosen would have signalled some kind of interpretative choice and ignored others. […] I think to tell this history is to make choices about its interpretation, and that is not a bad thing, and to not make choices about its interpretation risks not effectively telling this history (Expert comment, 2020).

This expert astutely noted that some of the interpretation was communicated through the music selected, which for some sites was purposefully “jaunty” and others were more serious in tone. The Old Government House was the site of colonial administration in NSW and thus, the “victorious” soundtrack (from YouTube’s Audio Library) was selected for that story node to communicate this perspective in the narrative. On the other hand, the soundtracks for the Aboriginal and Indigenous story nodes were darker, more serious in tone, and included Indigenous instruments. This expert’s comment demonstrates that the purposefully selected music elicited the desired emotional reaction (pathos) and had the intended rhetorical effect regarding the perspective from which the narrative content was communicated. The experts did not mention any specific group they felt was excluded/missing or that any of those included were lacking in content. Therefore, according to the expert reviewers, the perspectives in the iDoc were well-grounded and the rhetoric was strengthened by the multimodal choices.
6.5.1.3 Prospective audience(s) and transmedia extensions

Most experts agreed that the iDoc would be of interest to tourists and secondarily to students and heritage institutions. In her feedback, Dr. Bláthnáid Nolan also noted that the iDoc would be a great resource to pique the interest of some Irish people who may have possible convict ancestry connections to Australia because many are unaware of it or do not trace it (personal communication, January 29, 2020). Therefore, the experts expressed the iDoc’s potential to go beyond the cultural heritage tourist audience and serve as an educational resource and inspire genealogical tracing. In terms of the usefulness of the iDoc and how it could connect with other resources, the experts reported it would be useful as a tool to present potential visitors with information prior to their visit to the sites, it could be included on museum and other heritage-related websites, and possibly as a digital installation within a museum that visitors could interact with. One expert noticed that the external links connected the iDoc to existing transmedia pieces and saw how it could fit in with narratives in other media. The intended rhetorical purpose of the iDoc was to inform potential visitors about the WHS, but the expert-responses show that this genre of cultural heritage IDN could also be integrated into existing websites as a feature page, for example, which could be compared a virtual museum tour.

6.5.1.4 Future updates/revisions

As per the seventh phase of theoretical IDN creation framework, updates/revisions are important to ensure the sustainability of cultural heritage narratives to ensure they reflect the current views and information known. The suggested improvements for future iterations of the prototype, if it were to become a fully-developed version, are to include even more narrative beyond the geolocated sites, such as punishment aboard the ships and more on the assignment system. The experts requested references to appear for all content (e.g., artwork) in the nodes, but this would break documentary genre conventions, likely cause heavy disruptions in the user experience (i.e., emersion), and thus would need to be considered further. The experts noted that the default design aesthetic of white buttons over coloured images and moving images was difficult to read at times and they suggested clearer navigation options for moving backwards in the narrative. One expert, who chose to remain anonymous, said
I loved that the iDoc reflected shifting perspectives on convict heritage over time by including videos from different eras, and one way it could be connected with those sites themselves is if it continued to update as the sites updated, demonstrating that they are not stuck in time but are ever changing [sic] as people use them and engage with them in different ways.

This, without a specific question prompting this response, confirmed one of the arguments of this thesis in the IDN process, is that the iDoc has the potential to be continually updated because how we view and understand the history changes over time and needs to be updated with new discoveries and cultural contexts. Therefore, these suggestions point to some UX design improvements and areas for further elaboration if the iDoc prototype were to be built out into a published system that was available to the public as an ‘installation’ on a public website.

6.5.2 User Survey Results

There were 54 respondents to the user survey, of which 45 completed the whole survey. The following results are reported as per the individual responses to each question\textsuperscript{124} rather than eliminating responses to only those who completed the whole survey. Data from the landing web page with the informed consent form shows that 235 people visited the page during the four week period that the survey was live (January 27, 2020 - February 20, 2020). This suggests that there was enough interest in the iDoc to inspire click-throughs but that the Consent Form may have been a deterrent for potential users to proceed with the study (considering there was a 21% response rate).

6.5.2.1 Respondent audience demographics and interests

Comparing the demographics of the respondents with the user model, the majority of respondents fit the demographics of cultural heritage tourists as identified in previous studies (see Table 25). The demographics showed that (51\%) fell into the age bracket of over 30 years and over 90\% were highly educated with at least an undergraduate or an undergraduate degree in progress. Although many attempts to attract Australian participants were made and the distribution does not match the user

\textsuperscript{124} For example, most questions had 47 responses. The questions were reported individually as they pertained to specific variables being tested and the results were gathered for qualitative rather than quantitative purposes.
model for cultural heritage tourists, the results of the survey responses are still informative in regard to the narrative structure, navigation, use of multimodal content and the iDoc’s overall rhetoric.

Table 25. User Model Compared to Survey Respondents

<table>
<thead>
<tr>
<th></th>
<th>User model (see Chapter 4)</th>
<th>Survey Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>30+ years</td>
<td>30+ years</td>
</tr>
<tr>
<td>Education</td>
<td>At least an undergraduate degree</td>
<td>At least a Master’s degree</td>
</tr>
<tr>
<td>Local visitor</td>
<td>60%</td>
<td>2%</td>
</tr>
<tr>
<td>International visitor</td>
<td>40%</td>
<td>98% -- some are unknown…</td>
</tr>
</tbody>
</table>

Most survey participants (78%) had considered travelling to Australia prior to viewing the documentary. To further specify the survey participants in terms of what type of tourism niche they belonged to, the results showed that 50% of respondents identified their primary interest when travelling as the “natural landscape and wildlife,” 11% were interested the activities marketed to general tourists (as per the Australian Government’s Tourism statistics), such as “top attractions, tours, shopping and nightlife,” and 2% selected “Other” and specified their interest being sporting events (see Figure 41). Another 33% were most interested in “stories, folklore, history, music, art, and local cuisine” and 4% were interested in “infrastructure and buildings.” Thus, approximately 38% of participants had interests that fall within the specific interests of absorptive cultural heritage tourists. Notably, the result of 50% of participants who are interested in nature correlates with the results of the subject-matter interests of Instagram photos taken at the WHS. Future research may reveal that tourists in Australia have more of an interest in the landscape and wildlife than other aspects of the visitor experience. When asked which sources the respondents used to plan a holiday, the three top resources were word-of-mouth recommendations from friends/family (24%), TripAdvisor (21%), and published travel guides (19%), which confirms that the selected sources for the multimodal discourse analysis (Chapter 5) were representative of the common sources of tourism industry content.
6.5.2.2 Navigation and narrative structure

Most respondents (78%) spent between 5-10 minutes and 10-20 minutes (see Figure 42), which shows that they also spent on average a longer period of time than average users spend on a typical website or video-streaming site (e.g., YouTube). It is noted that approximately 11-12 respondents\textsuperscript{125} within the 22 respondents who spent 5-10 minutes were part of the selected cohort group of second-year undergraduate students and were only allocated this amount of time. Several questions regarding navigation were posed in order to understand how users made selections when presented with non-linear entry points into the narrative. The first questions asked which site users selected to visit first and why they made the selection. The WHS selected most frequently was Fremantle Prison (29% of users) followed by Hyde Park Barracks, and KAVHA (Norfolk Island) each making up 13% of the first-choice selection. A follow-up question of why users selected the site showed they had prior knowledge of them (via media or a friend), they were interested in the location and/or imagery presented, or reportedly made a random selection—although a few noted that their choice was driven by left-to-right default navigation (see Figure 43). Since so many users selected Fremantle Prison, the left-to-right navigation may be less random than users reported since it is a natural phenomenological reaction in English to read

\textsuperscript{125} Since the survey data were anonymous, the exact number of participants from the cohort cannot be identified as the survey was live and open to any participants including those targeted through social media (e.g., Twitter) and email distribution lists.
left-to-right and for navigating websites. Some users who reported “other” reasons for their navigation selection seemed to not have read the question clearly or understood the meaning. For example, one user wrote: “I was keen in Map Menu [sic] because I thought this option wouldn't be time consuming and I would be able to receive more information in less time.” In terms of the narrative navigation options after choosing a WHS, produsers more often selected non-linear and the alternative menu options (see Figure 44).

**Figure 42. User Time Spent Exploring iDoc**

![Bar chart showing time spent exploring iDoc]

**Figure 43. User-reported Reason for First Site Selection**

![Bar chart showing reasons for first site selection]
The map menu was strategically chosen in order to present users with a non-linear navigation that included different entry points into the narrative. Since the map was presented as the main menu, users evidently returned to it. Secondly, the “Stories” menu buttons also provided another non-linear narrative navigation as they were curated protostories by common themes: Convict Life, Irish Stories, Indigenous Stories and Female Stories. Interestingly, the respondents made equal use of the linear arrow navigation (forward and back) and the new narrative paths accessed by text-based buttons. This suggests that users were willing to change narrative paths as often as they were to continue linearly. The fact that users returned to the map and text-based menus demonstrates that the majority of users (71%) engaged in a non-linear exploration of the narrative and used the alternative narratives paths provided.

The more frequent use of the map menu and “Stories menus” indicates that website users may be more accustomed to the hierarchical tree-like web-based structure and may have been looking for a breadcrumb trail\textsuperscript{126} to indicate where they were in the narrative. For example, one user wrote: “I was a bit confused at the beginning when I scrolled down and saw the map menu and could not find a master menu (I figured it out eventually, and that was more my fault than the design).”

\textsuperscript{126} A breadcrumb trail is a term used to describe an in-page secondary navigation that shows the user’s location (commonly in a standard Tree navigation structure provided by websites).
Although respondents visited the non-linear paths, they desired a reference point for what they had seen and not seen and this lack in a sense of accomplishment or completion confused them as was noted by some respondents in the open-ended comments. The respondents’ confusion emphasised their familiarity with tree-like navigation structures and that many had not read the provided instructions that the map menu was the main menu and that many other menu options were available. However, based on the comments and pilot user testing, once respondents selected a narrative path, they seemed to intuitively understand how the navigation functioned.

### 6.5.2.3 SUS questions

The results of the 10 System Usability Scale (SUS) questions showed a “low marginal” fair usability score of 53, with an average of 68 considered a good usability score. Many of the UX design components were largely predetermined by the Klynt software and similar menus, overlay text, button styling, and video controls have been widely used in many existing and even award-winning iDocs. This raises questions about the usability of iDocs in general as an IDN genre. It is also noted that a limitation of the SUS scoring system is the possible discrepancies between the perceived usability of the system and reality. For example, the respondents provided some contradictory answers in terms of their level of perceived freedom to choose and desire for more interactivity choices. These results are discussed further in section 6.6.

### 6.5.2.4 Level of choice and dramatic agency

The results show a high level of choice was achieved as 76% of users reported having sufficient freedom to choose which content to interact with (see Figure 45). On the other hand, only 17% felt that the choice they made impacted the content that was presented to them and 38% were unclear as to whether their choices had an impact (see Figure 46). Both these questions were intentionally included as a measure against the credibility of what respondents reported in their answers. A possible explanation for these results may have been the word “consequences” used in the following question posed to users: “Q13 - I felt my choices had no consequences on what was presented to me.” During the pilot testing this question was flagged as difficult to understand and it was edited from the original phrasing, which was “I felt the choices did not make any difference to what was presented to me.” The word “consequence” is often used to connote a negative effect and could be why 45% of respondents selected the option
that their choices had no consequences on the content presented. The large discrepancy between these two questions indicates (in retrospective reflection) that the word “impact” may have been more neutral than “consequence” and that follow-up survey questions, such as an open text box answer option could have provided clarification as to why they felt their choices did not have narrative consequences. Considering the wording of Q13 was the negative inverse of Q11, if it was framed as a positive outcome, the curves in Figures 45 and 46 would be more closely aligned. Overall, users were provided agency but may have been unable to infer how their choices made an impact since they were not shown the entire scope of the narrative.

Figure 45. User Responses to Q11 – “I had sufficient freedom to choose content”

![Figure 45. User Responses to Q11](image)

Figure 46. User Responses to Q13 on Consequences of Choices

![Figure 46. User Responses to Q13](image)
6.5.2.5 Multimodality and design

The main modalities respondents preferred were video (67%) and text (13%). The preference for video reinforces the creative choice of using video whenever possible and secondly creating voice-overs and moving image compilations with a pause-play button (to simulate a video modality) when video content was not available. Furthermore, some nodes in the Fremantle Prison and KAVHA narrative paths offered users the option to learn about the content through video instead of the text content or voice-over. Video is conventionally the primary modality in iDocs so this may have also influenced respondents’ preference for it and because Web 2.0 has resulted in the increased consumption of video content (e.g., YouTube). When asked which modality they would like to see more of in the iDoc, more respondents than expected, 32% indicated that they would like more interaction buttons despite previous responses that the navigation was confusing (see Figure 47). This highlights a dissonance between the users’ issues with the navigation and desire for more interactivity. The only navigational control removed in terms of navigation was the ability to navigate to the first introductory node (i.e., homepage) since the aim was for produsers to select a new narrative path from the map menu. The users were otherwise permitted to move forward and backward linearly, they were given control to pause/play and skip ahead through video and audio, and follow new narrative path options provided through text-based buttons, the permanent footer menu which linked to the map menu and multiple “Stories” menus. Each node also had at minimum three and many had five navigation options in addition to the main footer menu options. Therefore, users were provided with all the possible types of interactions offered through the Klynt software and were provided more options than commonly seen in most iDocs, which offer less interactivity in order to maintain more authorial control over the narrative structure. This result also correlates with Knoller and Ben-Arie’s (2009) user experience survey with Turbulence (a fictional interactive movie), where users reported that there were too few “hotspots” (or hyperlinks) available.

In future studies on IDN, a follow-up open-ended question on what type of interaction buttons were desired could provide more clarity on what type of interaction respondents want more of. This result also reiterates the fact that there are discrepancies between user reports and their experience; thus more qualitative methods of analysis could provide further insight for future studies. Besides interaction buttons,
respondents indicated a desire for more historical photography and maps/blueprints, which positively demonstrates their interest in the increased use of cultural heritage content from GLAMs (see Figure 47).

The iDoc design aimed to achieve a moderate level of the dark tourism aesthetic based on the qualities identified by Krisjanous (2016) through the use of font, photography, colours and music (as detailed earlier in this chapter). The results showed that the majority of respondents (87%) reported a neutral to dark overall impression of the design colours (see Figure 48). The tone for the voice-over narrative and textual content was serious/informative as 75% of respondents confirmed, and 64% indicated that the content made them feel interested rather than bored, happy, sad, disturbed, or other. The overall result of the questions related to the dark tourism aesthetic was that the desired moderate level was achieved.
At the end of the survey, an open-ended text box was provided for “any other comments” to the researcher for which 19 respondents discussed the design. To gain further insight, these responses were grouped by the overall topic, which were on the navigation (8 responses), UX design (6), accessibility (2), and one other. This open-ended question revealed that the navigation challenges were mostly in regard to learning how to use the map menu and a few (2-3 respondents) noted that they were unclear on how much or little of the whole narrative they had experienced. One respondent’s comments summarised many of the other individuals’ points and captured the overall feel/impression producers reported:

I feel like my answers to the questions were on the negative side even though I thought it was a really rich, exciting & interactive resource. I found it challenging initially to figure out how to navigate the resource (I jumped straight in) but I figured it out quickly enough. One thing for me - I couldn't figure out how much of the content I had already seen which left me with a sense that I may have missed something. It would be useful if there was something that could indicate how much someone has seen / how much is left in a section.

There were evidently some challenges with learning the new navigation system presented in this iDoc and with some of the interface design features. The comments on the UX design were mostly in reference to limitations of the Klynt software (e.g., size of the footer menu and issues with responsiveness on different screen sizes). Thus, a different or bespoke iDoc authoring software could fix some of these UX design
issues. Two users also noted that closed captioning on the videos would be useful when the iDoc was being viewed in loud spaces, one user commented that they were “partially deaf,” and one user from the cohort of undergraduate students from Trinity College Dublin was deaf and attended the session with two sign language interpreters. This highlighted the importance of including accessibility options for multimodal content (e.g., subtitles and/or perhaps a button to reveal a pop-up with script of audio content). Other comments were sentiments of a positive experience with the iDoc. One commenter wrote: “Overall, I really enjoyed it. It is very well thought [sic]. It's a brilliant opportunity to have such a great amount of information on a phone.” This commenter also said that they would also enjoy experiencing the iDoc at the physical WHS with headphones. Another commenter said that they preferred the virtual tour over the prospect of physically travelling to the sites; “Personally I am far more excited about the opportunity to learn more history in a pleasant and comfortable way than the incentive to physically travel to Australia.” Therefore, in addition the goals of providing an armchair virtual tour and serving as a pre-trip planning tool, the iDoc was also recognised by respondents to have a vast amount of multimodal content that could be enjoyed on location at the Australian Convict Sites.

### 6.5.2.6 Rhetoric

Returning to the communication goals of this iDoc (as per Phase 2 in Chapter 4), they were to: (1) provide virtual site exploration, (2) serve as a proof of concept of a personalised, multimodal IDN of Australian convict history, and (3) inspire public participation. The first communication goal of bringing the physical locations into a digital space for exploration was achieved as evidenced by the open-ended comments summarised above. In addition to this, 88% of respondents reported that there was a moderate to satisfactory (rather too much or too little) amount of heritage content, and 65% reported that there was a moderate to satisfactory amount of tourism information. Although the iDoc prioritised cultural heritage content over general tourism content, these results show that there was also enough practical information provided for tourists. A baseline question, at the beginning of the survey, asking respondents to rate their prior knowledge of Australian convict heritage showed that 75% had low to very low prior knowledge. At the end of the survey, 64% of respondents reported learning a moderate to high amount and another 36% learning at least something, thus totalling 100% of respondents having learned from their experience with the iDoc (see Figure
As a proof of concept, the iDoc provided many navigation options and modalities (e.g., video and interactive timelines) for produsers to personalise their experience. Respondents felt they had the freedom to choose protostory paths and they expressed an awareness that more narrative existed behind the other options they did not select. Therefore, the iDoc holds a high level of replay value in that produsers could explore different sites (i.e., personalise their experience) and associated protostories during different interaction sessions.

Figure 49. How Much Respondents Self-reportedly Learned from the iDoc

In regard to inspiring produser participation, the survey results show that produsers would be willing to take various further actions post-experience. For example, 55% of respondents were likely to engage in a low level of participation by looking at one of the additional resources hyperlinked within the iDoc, such as novels, films, or external hyperlinks. The results pertaining to a more-involved level of participation showed that 54% of respondents indicated that they would likely visit one of the 11 Australian Convict Sites after viewing the iDoc. In response to the follow-up question of which site they would visit, 48% selected the site that they first chose from the main map menu (determined by comparing their answers between the two questions). This implies that more than half of respondents (52%) virtually visited more than one site. Furthermore, 67% of respondents selected that they would physically visit more than one UNESCO WHS and of those respondents 37% stated they would like to visit more than four of 11 Australian Convict Sites. These results suggest that the iDoc persuaded them to physically visit the sites and inspired potential
visitors to go to more than one. This finding could be useful for the tourism industry and the WHS management authorities who could work together to enhance the cross-promotion of the Australian Convict Sites.

Recalling the results of the multimodal discourse analysis (as detailed in Chapter 4), Port Arthur is the most-visited Australian Convict Site (as per the WHS management authorities’ public reports) and most-reviewed on TripAdvisor. By comparison, the most-frequently selected site that survey respondents expressed interest in travelling to was Fremantle Prison followed by Cascades Female Factory. This result correlates with Fremantle Prison and Cascades Female Factory receiving the second and third highest number of reviews on TripAdvisor, respectively. Among survey respondents, Cockatoo Island also generated more interest, ranking third over Port Arthur (see Figure 50). These results highlights that Fremantle Prison, Cascades Female Factory, Cockatoo Island, and Port Arthur must have a strong visitor appeal considering the respondents to this survey indicated a low-level of prior knowledge of Australian convict history and none of these WHS were prioritised in the iDoc rhetoric (e.g., appearing first in a hierarchical menu structure). In addition to an expressed interest in visiting the WHS, 53% of respondents said they would visit other locations in Australia related to convict heritage. This shows that the rhetoric generated interest among respondents, who prior to their iDoc experience, may have had little interest in visiting these historic sites considering 62% identified their primary interest when travelling as options other than cultural heritage (e.g., natural landscape and wildlife and top attractions). In addition to the iDoc inspiring interest in visiting the WHS and related convict history locations, 52% of respondents would be likely to share their experiences and most reported that they would do so using Instagram or Facebook.
Therefore, the results showed that persuasion was achieved as respondents reported that they were likely to engage in a variety of further participatory actions. As mentioned in previous chapters, many travellers use and place high value word-of-mouth recommendations from friends and family and 62% of respondents indicated they would be likely to recommend the iDoc to their personal networks (e.g., friends/family/colleagues) (see Figure 51).

Figure 51. Likelihood Respondents Were to Recommend the iDoc to Others
6.6 Discussion of Results for Future Research on iDocs

As stated in the case study objectives, the surveys for this iDoc prototype were conducted to capture data to evaluate (1) which modalities of content produsers preferred, (2) how the narrative structure impacted their experience, (3) whether the desired level of agency was achieved, and (4) if produsers could be inspired to take further action through the rhetoric communicated. The results showed that in the context of a cultural heritage tourism IDN (1) produsers preferred video content and historical photography; (2) the narrative structure provided freedom for exploration and encouraged non-linear navigation but its unfamiliarity caused some confusion; (3) the ability to measure perceived agency was inconclusive due to contradictory survey responses and the difficulty of measuring this academic concept through simple survey questions; and (4) produsers were inspired to visit one or more WHSs and related nearby attractions, view additional materials, and to share their travel experiences and the iDoc with their networks.

If this iDoc prototype were to be revised (as per Phase 7 – updates of the theoretical framework) for the intention of a public launch/publication, the survey results highlighted four main types of revisions/updates that could be made. At a high-level these revisions would include: (1) adding more narrative, (2) performing further user testing on the narrative structure, (3) improving the UX design, and (3) providing some form of produser training on new IDN genre interfaces. More specifically in regard to updating the narrative, adding summaries on the main map interface for each convict site would provide more semantic context for produsers to make more informed first-choice selections. Secondly, as the experts mentioned, further protostories could be added on themes related to convictism and transportation (which were beyond the scope of this case study). Adding narrative content would be a straightforward update, but the latter three updates are discussed in further detail in order to inform future research and user testing in the iDoc genre.

6.6.1 Produser Awareness of the Narrative Structure

The first point of discussion in regard to the narrative structure is the question of how much should be revealed to the produsers. Further user testing could be conducted on the provision of a “mind map” menu option – available in Klynt – for example, as it allows users to see the larger narrative landscape. This testing could help
determine whether it would help produsers navigate a Concentric Action Space narrative structure or whether it would overwhelm them with too many navigation options considering this iDoc offers a total of 290 story nodes (see Image 23 for Klynt mind map menu). The mind map menu was intentionally omitted from the iDoc prototype because, referring back to narratology, a narrative requires some structure or authorial control to be considered a narrative and creating a fully open navigation space would promote completely open/random exploration (e.g., Network structure) rather than users experiencing one or more protostories related to a WHS. Klynt allows for authorial control over which nodes appear in the mind map and this could be edited to create a user-friendly version that displays only the main narrative nodes. However, a selective version of the mind map may also give an incorrect perception of the narrative structure because some nodes would be hidden and this could impact user orientation within the whole narrative and their overall experience. There is a risk with a selective mind map view causing ludonarrative dissonance because their interactions may reveal hidden narrative nodes and this would not be consistent with what they are shown. The narrative paradox is evidently a challenge for IDN genres not only in terms of authorial design choices but due to produsers inexperience with different narrative structures and levels of interactivity. Further analysis of the UX design of video game maps and multi-interface designs could prove useful in an effort to improve the produsers’ feeling of situatedness within a digital narrative landscape that uses maps as navigation menus. Future IDN studies employing innovative narrative structures could include A/B style testing to present produsers with different levels of transparency to determine which provides the optimal amount of information without causing feelings of being overwhelmed or confused.

6.6.2 User Training / Introducing New IDN Genres

In addition to further investigating the level of narrative structure an IDN creator should reveal, training users on the iDoc genre prior to interaction could be another method towards ensuring the audience has a higher chance of experiencing the narrative as the creator intended. Developing a user training video was considered after the iDoc prototype was pilot tested, but was purposefully avoided for a few reasons. Firstly, in this case study, voluntary participants needed to perform four click-throughs to get to the survey. To participate, the first click was on the provided hyperlink (e.g., via social media or direct email) to the research consent form, which they would need
to read and provide consent. The second click-through resulted in submitting the consent form and revealed a hyperlink. The third click-through took them to the iDoc which they interacted with for as long as they desired. The fourth click through directed them to complete the survey. Adding an additional step of watching an introductory training video, for example, would have been another working step before the user could access the iDoc and take the survey. This additional step could cause user fatigue before they began the experiment and act as another barrier to participation, which is supported by the website statistics showing a response rate of 21% (as previously mentioned). Secondly, the map interface and narrative structure were key variables being tested in this experiment with the iDoc genre. Providing too many instructions, background information, and underlying logic on how the navigation and narrative structure were designed could have influenced the user’s perception and impacted the survey results. However, considering the survey results, an introductory instructional video\(^{127}\) would have likely impacted the results positively. An instructional video could include the rationale behind the creative work and allow produsers to begin interacting immediately rather than the first part of their experience being focused on learning how to use the unique map navigation—considering they did not read the provided instructions.

On the other hand, forgoing this additional training step provided raw user results on their experiences of interacting with a new interactive interface and unknown narrative structure which was designed to be discovered through exploration. This survey shows that, users need at least a basic introduction or further on-screen guides to allow them to confidently navigate through the iDoc. The expected genre conventions of both documentaries and websites combined with a lack of experience with iDocs impacted the overall reported user experience and SUS results. Therefore, future user studies on IDN genres may benefit from experimentation taking place in a lab environment and applying ethnographic approaches to data collection to permit additional time for instructions, user training, and the collection of further qualitative data. This could also help prevent users from trying to guess which variables are being

\(^{127}\) It is noted that although an instructional/training video was not provided, a movie trailer was created that provided an overview of the iDoc experience and it previewed the 11 UNESCO WHS. The movie trailer was shared on social media and remained as a separate blog post from the research consent form page. The movie trailer is still accessible at [https://nicolebasaraba.com/whats-next-after-netflixs-bandersnatch/](https://nicolebasaraba.com/whats-next-after-netflixs-bandersnatch/)
tested and thus answering the surveys or interview questions with incorrect assumptions that skew the results.

6.6.3 UX Design in iDocs

Based on the written comments at the end of the survey and lower SUS scores, users seemed to assume the system was being evaluated for usability and design aesthetic rather than as a theoretical proof of concept of remixing historical content with multiple modalities and testing the level of agency and persuasiveness achieved with a Concentric Action Space narrative structure. A limitation of performing user testing on any creative project is that peoples’ opinions are subjective and finding the right audience is key to achieving the desired effects of the work. However, this study highlighted that iDocs as a genre need to be further tested with users because there were many reported issues with the genre conventions used in many other iDocs, such as the subtle footer menu bar, very few navigational instructions, and white/transparent text overlaid on the moving images. For example, the iDoc prototype in this thesis used many of the same design conventions as the award-winning iDoc, *Hollow* (2013), such as a navigation style based on scrolling through photographs and graphics in each section, on-screen instructions (e.g., “Scroll Down”), and a “global navigation at the bottom [which] is elegant to the point of invisibility; users may most likely encounter it by accident, since it only appears when a cursor moves over it” (Aufderheide, 2015, p. 76). Although the creative work is heavily praised, the analytics from *Hollow* (2013) showed limited engagement with interactive elements as 75% of visitors did not proceed past the “splash page” (i.e, homepage), viewers stayed for about five minutes on the site, the returning viewers spent little more than six minutes, and the data analysed did not provide insights into the navigational choices (Aufderheide, 2015, p. 77). This case study and the few previous user studies on IDNs in the literature demonstrate that more user testing should be done by future creators.

Many iDocs have been recognised with awards for the narrative composition or story, but it is unclear how a general audience responds to the iDoc genre. Future user tests could gather more detailed data (after user consent), to track all click-throughs, eye-tracking for which modalities users focused on, and the length of time spent on each piece of narrative. This level of data collection could inform the future application of multimodal content within IDNs, UX design improvements, and perhaps lead to more genre saturation in the public domain (e.g., Netflix’s Black *Mirror*):
Another important variable for future consideration in UX research on IDNs is accessibility. Some participants in this case study were hearing impaired and while the intent of the iDoc was to provide a multimodal audio-visual experience, UX designers and future IDN researchers may consider how alternative modalities, such as text transcripts of audio files and how audio files of text could seamlessly be incorporated into the interface design to improve accessibility.

6.6.4 Crowdsourcing and Educational Applications

Although targeting cultural heritage tourists using social media was challenging, the number of impressions or level of interest in the iDoc was much higher than the survey response rate. The Research Consent Form seemed to be a deterrent because social media users are accustomed to hyperlinks taking them directly to the desired source of content, which in this case should have been the iDoc itself. This reiterates the argument for a lab-based setting for future IDN user testing, but also highlights that a cultural heritage tourist audience is difficult to target. As previous research showed, cultural heritage tourists are not easily defined and they are just one niche within a massively diverse tourism industry. This explains why there are less narrative materials targeted to this niche and because other tourists with many interests could also be interested in cultural heritage. Therefore, future research into IDNs for cultural heritage projects could identify a smaller and qualitatively more relevant user group by assembling focus groups and by finding participants based on their previous visits to GLAMs, for example. The expert reviewers were very positive in their responses which indicated that they were likely closer to the targeted audience of cultural heritage tourists and more closely fit the user model (described in Chapter 4). The experts also highlighted how the iDoc genre may be useful for educational purposes. For example, personal communications received (i.e., direct emails) expressed interest in sharing the iDoc with school-aged children and using it as an introduction to Australian convict history classes at the undergraduate level. Thus, future research areas could include user testing non-fiction IDNs with education-focused rhetoric.

6.6.5 Limitations and Future Work

Although this thesis was limited to one case study of creative practice, it served as a proof of concept as to how the seven-phase theoretical creation framework can be
used as a project management tool that is adaptable for different non-fiction IDN projects. Another limitation of this case study was that the IDN prototype was created by a single creator (the author of this thesis) rather than a team of specialists (e.g., historians, curators, UX designers and developers, etc.), which placed limits on the scope, design, and functionality. The communication goal of this IDN project was to inspire further produser action, but the ability for the produser to directly contribute new content to the narrative was not possible in the prototype version. A future functionality that could be developed within a full-scale version of the iDoc – or a new IDN developed in future research – could incorporate a level 5 interactivity (Ryan, 2015) that allows the produsers to become co-authors in the narrative system. Another possible area for further personalisation would be an IDN system that adapted to the produsers’ selections (e.g., past behaviour) and interests and recommend protostory paths. Considering these limitations and possible developments for future iterations of the iDoc (or future IDNs), this creative practice also showed how cultural heritage content can be remixed into a transmedia mothership narrative that builds intertextual links narratively and aesthetically between the content. The next chapter includes some final reflections on this research.
Chapter 7: Final Reflections

The purpose of this research was to investigate the question of how can a transdisciplinary approach expand IDN theory to include an evaluation framework for IDNs and a theoretical framework for the creation of multimodal, participatory narratives in non-fiction genres? This question was addressed in three main ways. Firstly, through a review of the current state of IDN research and forms across disciplines (Chapter 2), secondly through the expansion of IDN theory to non-fiction genres (Chapter 3), and thirdly in the demonstration of the seven-phase theoretical framework and evaluation model through the creative practice of developing an iDoc prototype on cultural heritage (Chapter 4-6). The case study objectives carried out were: (1) the identification and description of cultural heritage tourists as a potential IDN audience as was summarised in the produser model (see section 4.2.4); (2) uncovering differences between the three corpora of tourism industry content, expert-produced content, and user-generated content (UGC) summarised in the content model (see section 5.3); (3) prototyping an iDoc on the 11 UNESCO Australian Convict World Heritage Sites by remixing content from the three corpora and following the seven-phase theoretical creation framework; and lastly (4) evaluating the produser experience with the content modalities, narrative structure and agency provided, and whether the rhetoric was persuasive. The research question and objectives gave rise to three hypotheses under which the results and contributions of this work are summarised.

7.1 Revisiting the Hypotheses in Light of the Findings

7.1.1 Hypothesis 1: Gaps in Cultural Heritage Corpora

The first hypothesis was that there are gaps between the cross-media cultural heritage content produced by the tourism industry, the public, and subject-matter experts (e.g., GLAMs, historians). The results from the multimodal discourse analysis on these three corpora showed that there are differences rather than gaps between each. These differences were framed using a rhetorical theory approach (e.g., ethos, pathos, logos) to aid in the cross-comparison which showed that different datasets (i.e., sources of content) added value to the invention of an iDoc. Each corpus provided insights into
different aspects of the Australian Convict Sites that contributed to the formation of the macro-narrative of Australian convict history. For example, the tourism corpus revealed the presence of a dark tourism aesthetic, key dates, and a focus on the penal settlements’ infrastructure. The UGC corpus showed that WHS visitors are interested in the modern-day usage of the sites, on-site guided tours, and nearby tourist attractions. The expert-produced corpus highlighted the narrative themes of convict life, the labour system, and Australian identity. The tourism corpus was the smallest and contributed to the invention of the historical timelines (using TimelineJS) of the buildings/infrastructure for each Australian Convict Site in the iDoc. The UGC was the largest corpus and drew attention to nearby attractions and photos of the locations; it inspired the use of imagery and video as the primary narrative modalities as well as the transmedia extensions to related artworks and other convict-history related attractions. The expert-produced corpus was heavily text-based and highlighted untold aspects of convict history and offered more socio-cultural perspectives not covered in the other two corpora. The expert-produced content contributed to the invention of the macro-narrative paths on “Convict life” stories (which include videos with experts explaining Australian history and identity) and are connected to protostory nodes on the theme of Australian identity.

Therefore, cross-comparison of the three corpora showed differences in the modalities and perspectives of narrative content communicated by different producers and added value to the multi-perspective iDoc. The narrative differences between corpora can be attributed to the rhetorical goals. The tourism industry aims to drive visitors to specific attractions and provide practical information rather than in-depth cultural heritage narratives. The UGC focuses on the lived experience of visiting the Australian Convict Sites and shows more through photos than it explains through text-based accounts. Finally, the subject-matter experts uncover and interpret the historical record and archaeological sites to inform how the past contributes to the present-day understanding of Australian convictism. Tourists who are interested in visiting and learning about cultural heritage would gain a greater understanding from all three corpora, which is why the iDoc provides them with a platform that converges them into one space and allows them to select the perspectives, types of information, and content modalities they prefer.
7.1.2 Hypothesis 2: An Emergent Narrative Structure for Cultural Heritage

The second hypothesis was that an emergent narrative structure can be applied to the non-fiction context of cultural heritage tourism and mitigate the issue of the narrative paradox. There are many different forms or genres of IDN, such as those discussed in Chapter 2. Each genre comes with design conventions and narrative structures that are commonly seen and expected by the respective audiences. For example, the Vector narrative structure (Ryan; 2001) is used in hypertext fiction, the Tree narrative structure (Nelson, 2015) in websites, the Hidden Story structure (Ryan 2015) in ARGs, and the Concentric structure (Munday, 2018) in iDocs. This case study on the 11 UNESCO World Heritage Australian Convict Sites narrativized the collected cultural heritage tourism content into a combined Concentric Action Space structure. This was done to test whether connecting micro-narratives into a macro-narrative could provide produsers with a primarily multimodal – audio-visual rather than text-focused – overview of the heritage narratives that could be navigated through a non-linear exploration. The exploration was facilitated through a map interface which, as Murray (2012) suggested, is one method of eliciting pleasure/satisfaction from the produser. The results of the user survey showed that non-linear navigation was reportedly used much more often (76%) via the map, “Stories” menu buttons in the footer, and on-screen text-based buttons than the linear paths offered by the back-and-forward directional arrows. In the survey comments, produsers expressed some confusion as to what they were expected to get out of the experience. However, the iDoc was not intended to provide a complete traditional “story” with a beginning, middle and end, but to facilitate non-linear exploration through a structured narrative, which it achieved. Although, more context could have been provided to produsers about the purpose of the experience.

The definition of narrative provided in the introductory chapter of this thesis, as a “forgiving, flexible cognitive frame for constructing, communicating, and reconstructing mentally projected worlds” (Herman, 2002, p. 49), allowed for the narrativization of unconnected cross-media cultural heritage content into a new microcosm of Australian convict heritage in the form of an iDoc. This “projected world” of the history, people, and sense of place for each WHS presented an opportunity for produsers to reimagine the past and what it means to them in the
present. IDNs connect art and technology, allows produsers to enter the narrative and participate in its unfolding, and each produser’s experience with an IDN system is personalised and results in different emergent narratives. The challenge with creating new emergent narrative structures in IDN genres (e.g., iDocs) is that produsers’ inexperience with new forms can cause misunderstandings between user expectations and authorial intention. Future studies on experimental IDN genres and narrative structures could provide an introductory prelude informing the produsers/audience of the authorial intentions for the experience and/or training on how to use and navigate a new IDN system. This case study showed that a Concentric Action Space structure for a web-based IDN can narrativize cultural heritage content and present different protostories and/or curated thematic content that can be explored to produce meaning, learnings, and generate interest from produsers.

7.1.3 Hypothesis 3: Persuading Produsers to Participate

The third and final hypothesis was that a non-fiction IDN on the Australian Convict Sites can persuade members of the public to participate through further actions, such as visiting externally-linked content, sharing the IDN with their friends/family/colleagues via social media, or travelling to one of the sites. The results of the survey showed that the iDoc achieved the rhetorical goal of persuading produsers to take further action. Over 50% of respondents reported that they would look at resources mentioned in the iDoc and they would likely share their travel experiences on social media if they visited an Australian Convict Site. The most impactful result was the fact that 67% of respondents who reportedly planned to visit an Australian Convict Site actually planned to visit more than one, and 37% selected four or more sites they were interested in visiting. Previous research shows that visitors to UNESCO WHS oftentimes do not know they are visiting a UNESCO site and the visit is part of a more extensive travel itinerary. These results indicate that UNESCO and the individual site management authorities could use this iDoc or a similar IDN to persuade visitors to travel to another site. The 11 UNESCO World Heritage Australian Convict Sites could cross-market the other sites on their websites and brochures, possibly provide an incentive, such as a discount (as Woolmers and Brickendon offer visitors) or gamifying/rewarding visits to all 11 sites. For example, an ARG, a passport-style stamp collection on a printed brochure, or a mobile application could allow visitors to “collect” their visits to the Australian Convict Sites, considering that
UNESCO WHS are viewed as a collectable set for some visitors (Buckley, 2002). Therefore, this case study showed that there is substantial potential to further connect the 11 Australian Convict Sites through transmedia narrative practices and the iDoc had persuasive power to encourage different types of further participation post-interaction.

7.2 Main Contributions to Theory and Practice

7.2.1 Expansion of IDN Theory

The expanded IDN theory in each of the three core elements of IDNs (system, process, product) provides a practical framework that can consistently and strategically be used to create and evaluate non-fiction genres. Building on these three elements of IDNs for non-fiction narratives involved drawing upon theories from other disciplines. The IDN process was expanded through digital rhetoric; the IDN system through transmedial narratology; the IDN product through literary composition and HCI best practices for evaluation purposes. IDN theory was expanded into the seven-phase framework for creating IDN systems, which are: Phase 1 – Know the audience; Phase 2 – Determine communication goals; Phase 3 – Delivery; Phase 4 – Invention; Phase 5 – Arrangement; Phase 6 – Design; and Phase 7 – Updates. In addition to this framework, the IDN process was expanded to account for today’s participatory digital cultures. The more fully-developed IDN process could aid rhetorical narratologists and other scholars in analysing what is the “author-reader relationship” in printed media, to the Creator-Produser Transaction Model, which is mediated by the IDN system. Finally, the Ludonarrative Toolkit provides a series of “tools” for evaluating IDN products and to guide the development of future qualitative and quantitative variables that can be measured through user surveys, interviews, or focus groups; observation in a lab setting; and digital interaction tracking. The IDN analysis and the potential variables under evaluation can also be further scrutinised in terms of the modes of persuasion (ethos, pathos, logos, kairos) to understand the rhetorical effect(s) of non-fiction IDN genres. These developments provide further theoretical grounding to create strategic and purposeful IDNs that achieve established communication goals. The respective framework, model, and toolkit can also serve as a project management
tools for future IDN creators, especially for creative teams who may come from different disciplines or creative industries.

7.2.2 Remixing Transmedia – A Transdisciplinary Method

The mixed methodologies applied in the multimodal discourse analysis were transdisciplinary. A media-centred approach to understanding the diverse print-based and web-based datasets was conducted by applying specific analytical frameworks developed by linguistic/multimodal scholars to approaches used by digital humanists, namely distant and close reading. This analysis permitted a bottom-up remix of existing cultural heritage narratives based on content from the tourism sector, the public (UGC), and subject-matter experts to construct a digital-born iDoc—*Sentenced to Transportation: A Virtual Tour of Australia's Convict Past*. The iDoc was designed directly in Klynt to allow the narrative structure to emerge through the digital creative process rather than being predetermined on paper. Thus, the second contribution of this thesis is the proposed new method of developing transmedia narratives through remix, which adds to the already-established methods of the “system” and “snowball” designs as outlined by Ryan (2013). The remix transmedia method requires an extensive amount of research time and resources to review existing content and curate the narratives, thus the resulting IDNs would benefit from having a team of creators from specialised areas of expertise. For example, cultural heritage narrative experts, such as historians, archaeologists and museologists/curators, could identify key moments in time, untold histories from archives, and recently-discovered artefacts for inclusion; UX designers could assist with mapping the IDN interface; and filmmakers and/or writers could assist with developing the protostories. The process of remixing transmedia narratives would involve at least some level of multimodal discourse analysis and creative teams could use the seven-phase creation framework and this case study documentation on the creative practice to determine how to remix the results for non-fiction narratives.

7.2.3 An Empirical Study on IDN Evaluation

The iDoc prototype was simultaneously distributed and tested on two groups for evaluation purposes. Since the narrative was constructed using a bottom-up approach and the case study was a new area in which the creator had no previous or formal background in, a group of selected experts in the areas of crime and punishment
(e.g., sociology), history and archaeology among others were surveyed in regard to the accuracy of the micro-narratives. The overall feedback from experts was positive and they expressed the opinion that the iDoc would provide the public/tourists with a satisfactory overview of the history and many commented on its potential as an educational tool. Since each produser can experience a different emergent narrative, it provides a multi-perspective foundation for student discussions about the formation of cultural heritage, Australian identity, the role of female convicts, and the impact of convictism on the Irish, British, and Indigenous populations. This is supported by Zhu’s (2012) argument that “intentional ambiguity in the story can be a powerful device, leaving something undetermined in order to open up multiple possible meanings” (p. 153) and the iDoc structure provided a narrativized overview with hyperlink transmedia extensions and posed questions about the history in the voice-over narration. Therefore, it presents many opportunities for educational applications.

At the time of writing this thesis, Sentenced to Transportation was the first digital-born IDN created for user testing. A variety of factors were tested, including an emergent narrative structure (i.e., Concentric Action Space), the provision of multiple types of interaction and alternative content modalities, and its ability to persuade further action. It is one of very few studies on a non-fiction iDoc and one of the largest studies on IDN user testing to date with 45 participants who answered all survey questions and with the additional seven experts participating in a separate survey, bringing the total to 52 respondents. Previous studies on fictional IDNs had a total of 32 respondents or fewer (Roth 2019; Kolhoff & Nack, 2019) and Van Enschot et al. (2019) has the largest study to date with 96 participants, but they were divided into different subgroups to engage with different iterations of a non-fiction iDoc. This case study is also the second published study (after the Last Hijack Interactive study by Van Enschot et al., 2019) on a non-fiction IDN (at the time this thesis was written), which demonstrates that it helps fill the gap in empirical research in this area.

To summarise, this thesis expanded IDN theory, applied it to an iDoc as a proof-of-concept, and tested it through surveys distributed to two user groups (i.e., experts and the public) and thus, it followed through in all three aspects of research— theory, practice, and evaluation. Although this thesis focused on a case study of 11 UNESCO WHS, the seven-phase theoretical framework was developed for applicability to any non-fiction IDN genre, such as serious games, virtual museums,
journalism, environmental storytelling, or other projects. Future creators of cultural heritage IDNs could also use the demonstrated method of remixing transmedia and an emergent structure to narrativize cultural heritage and increase public engagement with history. The case study also highlighted how UNESCO WHS and other cultural heritage locations can be brought into a digital narrative space for virtual exploration, how undiscovered semantic connections can be formed into narratives, and that further measures need to be taken to improve visitor awareness and respect for world heritage values and site conservation.

7.3 Future Research Directions

This transdisciplinary research has highlighted possible avenues of further research in the areas of ludology, cultural studies, and IDNs. To date, many ludologists have studied new narrative plots through game mechanics that allow for or inhibit player agency and they have developed many authoring tools (i.e., software). Two possibilities for future research in ludology would be in UX design in terms of improving accessibility options and testing multiple menu interfaces which are often applied in video games. For example, a layered map interface with visual and textual content for an IDN could aid future narrative creators in developing more complex, multi-perspective narratives that allow produsers to see the options yet remain grounded in the digital ludonarrative space. Another area of development in ludology could be the development of an authoring tool that produces a sophisticated and high-quality visual interface for produser consumption while also allowing them to directly contribute content to the IDN (level 5 interaction – Ryan, 2015). For example, Wikipedia is a simple web-based interface that enables contributors to log in and make additions or edits to new or existing pages of content, but the interface (front-end) has a simple design and navigation. At the time of writing, no known authoring tool presents a multimodal (audio-visual) interface that permits contributions from IDN participants. Furthermore, there is room for development in artificial intelligence (AI) and/or recommender-system based authoring tools which could allow for the creation of adaptive content based on past produser experience and could, for example, track user interactions and suggest commonly traversed narrative paths (i.e., protostories) based on similar user interests.
The narrative focus on cultural heritage IDNs also inspired future research questions and directions for the author of this thesis and other scholars interested in these issues. The sampled datasets suggested that members of the public and scholars are less inclined to mention the UNESCO brand, which raises the question for future research as to what world heritage and the UNESCO brand mean to visitors? One area for future work is to consider how to persuade behavioural change at UNESCO World Heritage Sites in an effort to promote conservation and preservation efforts by the site management authorities, advocate respect and appreciation for the sites to visitors, and encourage civic action and more sustainable tourism practices. Another persuasive narrative goal to investigate in the context of cultural heritage IDNs is collective memory-making and connecting heritage locations to national and global identities. Future narrative development could also have a more educational focus (e.g., “edutainment”) with the communication/rhetoric goals being designed towards desired learning outcomes for students and/or specific civic actions for members of the public.

Future research on non-fiction IDNs may include the analysis of other existing IDN genres to contribute to the evolving New Writing Universe and identify clear genre conventions. This could help develop methods of introducing new IDN forms and types of digital interactions incrementally to the public (i.e., novice users) by building on existing phenomenological narrative experiences. For example, the e-book remediated the printed novel and this research showed that moving from linear to non-linear narrative structures in digital media requires more time and user testing in order to develop more seamless experiences. As mentioned in Chapter 6, future user testing of digital multimodal content selection could employ ethnographic methods by using a combination of A/B testing, multimodal tracking, and user interviews to provide more qualitatively rich data to inform where current IDN boundaries can be pushed and genre conventions can be intentionally broken. Artists and creative industries are continually experimenting with digital media, but as Picasso (n.d.) said, you first need to “learn the rules like a pro, so you can break them like an artist.” A transdisciplinary approach can allow artists to create new experiences that will be well-received by audiences, but the field of IDN research needs plenty of time, experimentation, and testing to develop further. This thesis presents a completed body of work, but as this study of IDNs in the context of today’s participatory digital cultures showed, the narrative does not really end here.
References


C


**D**


**F**


Flanagin, A. J., & Metzger, M. J. (2007). The role of site features, user attributes, and
information verification behaviors on the perceived credibility of web-based
information. *New Media & Society, 9*(2), 319–342.
https://doi.org/10.1177/1461444807075015

Flanders, J., Piez, W., & Terras, M. (2007). Welcome to digital humanities
quarterly. *Digital Humanities Quarterly, 1*(1).

Semantics, 25*(2), 97-141.

Forceville, C. (2017). Interactive documentary and its limited opportunities to

Fodor’s Travel Essential Australia (2018). USA: Fodor’s.


http://www.fortmcmoney.com/#!fortmcmoney

Channel view publications.

110.

https://www.tripadvisor.ie/Attraction_Review-g285726-d319394-Reviews-
Fremantle_Prison-Fremantle_Greater_Perth_Western_Australia.html


https://fremantleprison.com.au/historyheritage/heritage/conservation/heritage-
management-plan/

Frommer’s Australia. (2019). L. Mylne (author). USA.

Narratology.* Retrieved from: https://www.lhn.uni-hamburg.de/node/123.html


Gouveia, P. (2009, August). Narrative paradox and the design of alternate reality games (ARGs) and blogs. In 2009 International IEEE Consumer Electronics Society's Games Innovations Conference (pp. 231-238). IEEE.


I


J


**K**


Lessig, L. (2005). The people own ideas: New technologies are forcing us to make important choices about how we use books, music, software, and other cultural products. Do we want them to be free—or not? *MIT Technology Review*, p. 46-53.


M


McIntosh, A. J. (1999). Into the tourist’s mind: Understanding the value of the heritage experience. *Journal of Travel & Tourism Marketing, 8*(1), 41-64.


NerdAlert. (2014 Nov 23). [Video]. How ‘Choose Your Own Adventure’ Changed Gaming & Reading Today. Retrieved from: https://www.youtube.com/watch?v=2GXp-uf5FKE&index=10&list=PLVfKxe-GUiEZ2wQyXm29mDXCyBZCvS4&t=0s


University of Chicago Press.


Q


R


Sauro, J., & Lewis, J. R. (2016). *Quantifying the user experience: Practical statistics for user research*. Morgan Kaufmann.


U


V


W


### Appendices

**Appendix 1 – Branches of Narratological Overview**

<table>
<thead>
<tr>
<th>Narratology branch</th>
<th>Description</th>
<th>Theorists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classical/</td>
<td>“the set of general statements on narrative genres, on the systematics of narrating (telling a story) and on the structure of plot” (Ryan &amp; von Alphen 1993: 110).” (Meister, 2013).</td>
<td>Genette (1972); Barthes; Greimas; Todorov; Prince (1987); Rimmon-Kenan; Bal;</td>
</tr>
<tr>
<td>Structuralist/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formalist</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicative</td>
<td>“From a communicative perspective, narrative fiction is regarded as an interaction between an author and the readers through the medium of a text.” (Nunning, 2008 as cited by Sommer, 2009, p. 90)</td>
<td>Nunning (2008)</td>
</tr>
<tr>
<td>Contextual</td>
<td>“the acts in the real world that generate literary narratives” (Chatman, 1990, as cited by Nunning, 2009, p. 60).</td>
<td>Chatman (1990)</td>
</tr>
<tr>
<td>Cultural</td>
<td>“an ensemble of narratives that are not ‘imagined communities’ (sensu Anderson 1983), but ‘narrative communities’ created through the stories the members tell about themselves and their culture” (Heinen &amp; Sommer, 2009, p. 61).</td>
<td>Heinen &amp; Sommer (2009); Nunning</td>
</tr>
<tr>
<td>Feminist</td>
<td>“the implications of sex, gender, and/or sexuality for understanding the “nature, form, and functioning of narrative” (Prince 1987: 2003: 65)” (Lanser, 2013).</td>
<td>Susan Sniader Lanser (1992); Robyn Warhol (1989); Case (1999); DuPlessis (1985); Mazei (1996); Page (2006); Robinson (1991);</td>
</tr>
<tr>
<td>Rhetorical</td>
<td>“a purposive communicative act […] a recursive relationship among authorial agency, textual phenomena (including intertextual relations), and reader response” (Phelan 2006: 300, as cited in Sommer, 2009, p. 91)</td>
<td>Phelan (2006); Prince; Booth (1961); Chatman (1990); Kearns (1999)</td>
</tr>
<tr>
<td>Transmedial</td>
<td>“stories are nonetheless inflected by the constraints and affordances associated with a given medium” (Herman, 2009, p. 85)</td>
<td>Herman (2009); Ryan (2004); Jan-Noel Thon (2014); Punday (2003)</td>
</tr>
<tr>
<td>Unnatural</td>
<td>“systematically investigates the anti-mimetic qualities of narratives of all sorts. […] Unnatural narratologists develop new analytical tools and modelling systems that help describe the fact that many narratives deviate from real-world frames in a wide variety of ways” (Alber &amp; Hansen, 2014, p. 2).</td>
<td>Fludernik (1996); Nielsen (2004; 2013); Heinze (2008); Alber; Iversen; Makela; Nielsen; Richardson</td>
</tr>
</tbody>
</table>
Appendix 2 – Rhetorical Narratology Participants in Narratives

This appendix serves to further define the concepts in Chatman’s (1968) Communication Model (see Figure 12), namely the real author, implied author, narratee, implied reader and real reader. This was not inserted into Chapter 3 because it is a historical digression into discussing the foundations of rhetorical narratological theory which were modified for the applicability to digital interactive narratives.

Wayne C. Booth, in *The Rhetoric of Fiction* (1961), put forward the rhetorical concept of the “implied author” (IA), which resulted in a debate among narratologists for the past several decades about the role of the author (Shen, 2013, p. 141). The “implied author” is the person assuming a “certain air or a particular stance when writing the text” (the second self) and the “real author” is “the same person in daily life out of the writing process” (the first self) (Shen, 2013, p. 242). Shen (2013) says “the implied author is the role-playing person making all the textual choices, and the real author is the same person in daily life out of the writing process” (p. 143). In other words, the author is the person, and the implied author is the writer of the text. Shen (2013) explains that many scholars (e.g., Herman & Vervaeck, 2011; Kindt & Müller, 2011; Stefanscu, 2011; Ryan, 2011) misinterpreted the “implied author” to be the person constructed by the reader (as cited in Shen, 2013, p. 144) and she argues that Booth coined the term “implied author” to allow rhetorical critics to examine the author-audience communication rather than solely focusing on the text, and the consideration of the historical context of the textual creation (Shen, 2013, p. 143 & 155).

Booth (1961) describes the “implied reader” as “the self whose beliefs must coincide with the [implied] author’s. Regardless of my [the reader’s] real beliefs and practices, I must subordinate my mind and heart to the book if I am to enjoy it to the full” (Shen, 2013, p. 153). Shen (2013) explains that Booth (1961) does not consider or mention the social or psychological contextual requirements that implicitly lie within his concept of the “implied reader” (p. 153). She argues that “we need to take into consideration the historical context in order to enter the IA’s like-minded audience in history, otherwise there cannot be successful communication between the implied author and us readers.” (Shen, 2013, p. 154). Prince (1971, 1973, 1980) described the structural properties of narrative and introduced the concept of “narratee,” which is “the audience (of one or more than one) that the narrator in a given narrative addresses”
Prince’s (1985) concept of narrate as the (non-real) addressee which differed from the narrative receiver resembles Rabinowitz’s (1977) concept of “narrative audience” (as cited in Prince, 2011, para. 13). Rabinowitz (1977) distinguished between the actual audience and the authorial/hypothetical/ideal audience “for whom the narrator (rather than the real author or the implied author) wishes s/he were narrating” (as cited in Prince, 2011, para. 13). Prince (2011) explains that:

As opposed to the actual audience [real reader] and the authorial audience [implied reader], the narrative audience [narrate] considers the represented characters and events to be real and believes that the fiction narrated is a history. As opposed to the narrate, it is no so much a figure ‘out there’ in the text as a role that the text asks (or requires) the real reader to play (para. 13).

Prince (2011) said that reader-response criticism began to fall out of fashion in the literature by the mid-1980s because it became ubiquitous, and more post-classical narratologies began to emerge (e.g., “natural” narratology, psychonarratology, cognitive narratology) (para. 14).

References pertaining to Appendix 2


Appendix 3 – Multimodal Discourse Analysis Codebook Templates

The following two codebooks (see Table 27 and Table 28) were applied as part of the methodology conducted in Chapter 4 for the multimodal discourse analysis of existing content on the UNESCO World Heritage Australian Convict Sites. These codebooks list the qualities analysed according to additions and edits made to Bateman’s (2008) Genre and Multimodality Model (GeM) and Hiippala’s (2015) later application of the GeM to tourism brochures.

Table 27. Template of Codebook 1: GeM Analysis for Printed Artefacts

<table>
<thead>
<tr>
<th>Base Layer</th>
<th>Graphic</th>
<th>Diagrammatic</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text-typographic</td>
<td>Digital photos</td>
<td>Icons</td>
<td>Running headers</td>
</tr>
<tr>
<td>Taglines</td>
<td>Graphic</td>
<td>Arrows</td>
<td>Page Numbers</td>
</tr>
<tr>
<td>Headings</td>
<td>Historic photos</td>
<td>Connecting lines</td>
<td>Footnotes</td>
</tr>
<tr>
<td>(pre-digital)</td>
<td>Drawings/illustrations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Titles</td>
<td>Diagrams</td>
<td>Logos</td>
<td>Delimiting Lines</td>
</tr>
<tr>
<td>Headlines (subtitles)</td>
<td>Maps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Captions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of paragraphs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emphasised text (e.g., italics, bolded)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superimposed text (i.e., layered)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>List and menu items</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table cells (e.g., columns)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of pages/panels</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Navigation Layer

<table>
<thead>
<tr>
<th>Navigation Layer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Footnotes</td>
<td></td>
</tr>
<tr>
<td>External references</td>
<td></td>
</tr>
<tr>
<td>Instructions/guidelines</td>
<td></td>
</tr>
<tr>
<td>Accessibility</td>
<td></td>
</tr>
</tbody>
</table>

Layout Layer

<table>
<thead>
<tr>
<th>Layout Layer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure/organisation</td>
<td></td>
</tr>
<tr>
<td>Realisation of information</td>
<td></td>
</tr>
</tbody>
</table>

Rhetorical Layer

<table>
<thead>
<tr>
<th>Rhetorical Layer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intended purpose/vision</td>
<td></td>
</tr>
<tr>
<td>Intended audience</td>
<td></td>
</tr>
<tr>
<td>Creator/publisher</td>
<td></td>
</tr>
<tr>
<td>Publication date</td>
<td></td>
</tr>
<tr>
<td>People/characters</td>
<td></td>
</tr>
<tr>
<td>Perspectives/point of view</td>
<td></td>
</tr>
<tr>
<td>Chronological events</td>
<td></td>
</tr>
<tr>
<td>UNESCO WHS designation</td>
<td></td>
</tr>
<tr>
<td>Calls to action</td>
<td></td>
</tr>
</tbody>
</table>
Table 28. Template of Codebook 2: Multimodal Discourse Analysis for Websites

<table>
<thead>
<tr>
<th>First impression (dark tourism aesthetic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Look and feel at a glance”</td>
</tr>
<tr>
<td>- What is visually prioritised?</td>
</tr>
<tr>
<td>- What topic/content is highlighted?</td>
</tr>
<tr>
<td>- Colours, font, images (e.g., dark tourism aesthetics)</td>
</tr>
<tr>
<td>Record affective reactions (e.g., screenshots)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Navigation Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menu style (how many menus, use of icons, etc.)</td>
</tr>
<tr>
<td>Home-button functionality included (click and return to homepage)</td>
</tr>
<tr>
<td>Footer (what content is included)</td>
</tr>
<tr>
<td>Social media accounts (hyperlinks/icons)</td>
</tr>
<tr>
<td>Instructions/guidelines</td>
</tr>
<tr>
<td>Accessibility</td>
</tr>
<tr>
<td>Personalisation options</td>
</tr>
<tr>
<td>External references (text or hyperlinks)</td>
</tr>
<tr>
<td>Digital forms</td>
</tr>
<tr>
<td>Attachments</td>
</tr>
<tr>
<td>Newsletter subscription</td>
</tr>
<tr>
<td>Search button (yes/no)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Layout Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure/organisation (sitemap)</td>
</tr>
<tr>
<td>Realisation of information (colours, font, etc.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taglines</td>
</tr>
<tr>
<td>Tables (number of columns/cells)</td>
</tr>
<tr>
<td>Total number of web pages</td>
</tr>
<tr>
<td>Word count</td>
</tr>
<tr>
<td>Total images</td>
</tr>
<tr>
<td>Digital photos (dated 1975+)</td>
</tr>
<tr>
<td>Historic photos (pre-digital)</td>
</tr>
<tr>
<td>Artwork (illustrations, paintings, art, etc.)</td>
</tr>
<tr>
<td>Diagrams</td>
</tr>
<tr>
<td>Maps</td>
</tr>
<tr>
<td>Video</td>
</tr>
<tr>
<td>3D/animation/interactivity</td>
</tr>
<tr>
<td>Music</td>
</tr>
<tr>
<td>Audio file/voice-over (Krisjanous, 2016)</td>
</tr>
<tr>
<td>Non-vocal sounds (Krisjanous, 2016)</td>
</tr>
<tr>
<td>Logos &amp; Icons</td>
</tr>
<tr>
<td>Arrows</td>
</tr>
<tr>
<td>Icons</td>
</tr>
<tr>
<td>Other branding</td>
</tr>
<tr>
<td>Music</td>
</tr>
<tr>
<td>Audio file/voice-over (Krisjanous, 2016)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rhetorical Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intended purpose/vision</td>
</tr>
<tr>
<td>Intended audience</td>
</tr>
<tr>
<td>Creator/publisher</td>
</tr>
<tr>
<td>Publication date</td>
</tr>
<tr>
<td>People/characters</td>
</tr>
<tr>
<td>Perspectives/point of view</td>
</tr>
<tr>
<td>Chronological events</td>
</tr>
<tr>
<td>UNESCO WHS designation</td>
</tr>
<tr>
<td>Calls to action</td>
</tr>
<tr>
<td>Transactions/commercialisation (Krisjanous, 2016)</td>
</tr>
</tbody>
</table>
Appendix 4 – Multimodal Discourse Analysis Datasets

The following are hyperlinks to datasets, available in Voyant Tools, collected during the multimodal discourse analysis conducted in Chapter 4 as part of the Invention Phase of the iDoc on the UNESCO Australian Convict World Sites.

TripAdvisor data (UGC)
- Cascades Female Factory Voyant Tools: https://voyant-tools.org/?corpus=440c033617810ca7af9b5dde353f6d0b
- Coal Mines Historic Site Voyant Tools: https://voyant-tools.org/?corpus=e3a6bdcc5fb7f9eadeb2e809244d2aa
- Cockatoo Island Voyant Tools: https://voyant-tools.org/?corpus=9674c3f422d29a15f287b2ee93d508e4
- Fremantle Prison Voyant Tools: https://voyant-tools.org/?corpus=936d9c3242d78c6f598e30a6a00f015e
- Hyde Park Barracks Museum Voyant Tools: https://voyant-tools.org/?corpus=9a7d717b62d9a8ac0169ac3c5eda2829
- Kingston and Arthur’s Vale Voyant Tools: https://voyant-tools.org/?corpus=db98d298ce7b8b71daed8a942741adf7
- Old Government House Voyant Tools: https://voyant-tools.org/?corpus=7f1105af4b2e9f3f1123723b568935
- Port Arthur Historic Site Voyant Tools: https://voyant-tools.org/?corpus=a8555aa0dc3c94423feebb18f535d359
- All 8 Australian Convict Sites Voyant Tools: https://voyant-tools.org/?corpus=f19aa02e9da9268147d4cf85ea7efc78

WordPress blogs (UGC)
- Australian convicts_general_search: https://voyant-tools.org/?corpus=3195171cfa4d1302a70504171c79f3f
- Brickendon & Woolmers: https://voyant-tools.org/?corpus=aa2f6ec7aa2437531dc55dd45ffbb6d54
- Cascades: https://voyant-tools.org/?corpus=3ff3ef55b2476bb5dddb7b02b3e9b713
- Coal Mines: https://voyant-tools.org/?corpus=a1f1fe9767976347f4c1559dc7ed78d5
- Cockatoo: https://voyant-tools.org/?corpus=75e3683ff462ba15983e768a15c1085c
- Fremantle: https://voyant-tools.org/?corpus=fc3a3f1fea3681c48fc272a08cfecf35
- Hyde Park: [https://voyant-tools.org/?corpus=0e0382a6706416b9f98b70af56a4f0fe](https://voyant-tools.org/?corpus=0e0382a6706416b9f98b70af56a4f0fe)
- Maria Island: [https://voyant-tools.org/?corpus=442c0f40bacb5a7e095ed2e84405bff](https://voyant-tools.org/?corpus=442c0f40bacb5a7e095ed2e84405bff)
- Norfolk Island: [https://voyant-tools.org/?corpus=02dd8ba05693d4f51749aaa5b6b3b3cf](https://voyant-tools.org/?corpus=02dd8ba05693d4f51749aaa5b6b3b3cf)
- Old Government House: [https://voyant-tools.org/?corpus=4e102cdd09b3a2ef6e5449acfa92063a](https://voyant-tools.org/?corpus=4e102cdd09b3a2ef6e5449acfa92063a)
- Port Arthur: [https://voyant-tools.org/?corpus=5493f57acea4171134049d63c713dd29](https://voyant-tools.org/?corpus=5493f57acea4171134049d63c713dd29)
- Old North Road: [https://voyant-tools.org/?corpus=b2f1708515f322dcd40962762592b366](https://voyant-tools.org/?corpus=b2f1708515f322dcd40962762592b366)
- Group comparison: [http://127.0.0.1:8888/?corpus=bd2984214fe41171d24d14cb7f876be4](http://127.0.0.1:8888/?corpus=bd2984214fe41171d24d14cb7f876be4)

**Instagram (UGC)**

- Collective Instagram comments across all WHS: [https://voyant-tools.org/?corpus=3d04c72e06c7d7930436c206225f8134](https://voyant-tools.org/?corpus=3d04c72e06c7d7930436c206225f8134)
- Collective Instagram captions across all WHS: [https://voyant-tools.org/?corpus=77fb98bbe5a343961ae33527c7641d28](https://voyant-tools.org/?corpus=77fb98bbe5a343961ae33527c7641d28)

**Expert websites**

- Expert HTML websites’ text: [https://voyant-tools.org/?corpus=d49e9c0caaa86ebcaf95beac53f885c3](https://voyant-tools.org/?corpus=d49e9c0caaa86ebcaf95beac53f885c3)

**Codebooks – Close Reading Analysis**

- [https://drive.google.com/drive/folders/1Pk9Fe_52g5yMxAQ-EJHwCgdnlbkaCwIw?usp=sharing](https://drive.google.com/drive/folders/1Pk9Fe_52g5yMxAQ-EJHwCgdnlbkaCwIw?usp=sharing)
Appendix 5 – *Sentenced to Transportation: A Virtual Tour of Australia’s Convict Past*

The creative products as part of this practice-based research include a movie trailer and the iDoc prototype.

**The iDoc Movie Trailer**
Available at: [https://vimeo.com/388703715](https://vimeo.com/388703715)

**The iDoc Prototype**
Appendix 6 – Expert Consent Form, Survey, and Results

Informed Consent Form for Selected Experts

Lead Researcher:
Nicole Basaraba, PhD Candidate
School of Languages Literatures and Cultural Studies
ADAPT Centre, Trinity College Dublin
Email: basarabn@tcd.ie

Introduction
This research is being conducted as part of a PhD dissertation in the field of digital humanities and media studies. Interactive digital storytelling is a growing area of research and experimentation especially for cultural heritage topics. An interactive web documentary (iDoc) was created for cultural heritage tourists who are interested in visiting places such as historical sites, museums, archaeological sites, viewing artwork, hearing stories and seeing natural landscapes and wildlife.

An iDoc is a form of digital storytelling that aims to "document the real and uses digital interactive technology to realise this intention" (Aston & Gaudenzi, 2012, p. 125). A similar narrative concept you may have previously experienced are “choose your own adventure" novels or Netflix’s Black Mirror: Bandersnatch, where you are given choices of what to explore.

The iDoc prototype being tested in this study is titled "Sentenced to Transportation: A Virtual Tour of Australia's Convict Past" and it focuses on tourism to the 11 designated UNESCO World Heritage Australian Convict Sites.

Procedures of this study
After consenting to participate, you will be provided access to an iDoc about Australian convict history, which is viewable on any digital device.

When using the iDoc, you will be have different navigation options:

1. Self-guided tour: Follow the back (<) and forward (>) arrows or select a button to choose a new narrative path

2. The grey footer menu at the bottom of each page, which includes:
   - Map menu: Choose to explore a UNESCO site locations on an interactive map
   - Text menu: Choose to explore a UNESCO site from the list of 11
   - Stories: Select a specific story that interests you in the footer menu

The self-guided tour is the default navigation option and you may always refer to the map menu to relocate yourself.

Note for the best viewing experience, the following is recommended:
- reduce your browser size if viewing on a desktop or laptop;
- use a landscape orientation if viewing on a tablet;
- view with sound on.
You may explore as little or as many of the narratives paths as you wish. There is no time requirement or limit. The experience ends when you click the “TAKE SURVEY” link found in the bottom menu of any page, which will take you to a post-interaction questionnaire that will take approximately 10 minutes or less to complete.

You may quit the experience at any time if you do not wish to participate and support this research. The only identifying information collected is the email address you voluntarily provide as a method of your consent to participate, any information you voluntarily provide in the questionnaire, and with Google Analytics activated only on the Consent Form web page, the researcher will only be able to see the country of origin of unidentifiable users. Google Analytics will not be activated on the iDoc itself.

The email address you provide may include your name or you can provide an alternative email address without your real name if desired. The email address is used in place of your (the participant’s signature) and may be used in follow-up communications as needed. For example, a copy of the consent form will be sent to you and/or if you consent to participate but forget to complete the post-interaction questionnaire, an email reminder may be sent. Individual responses will be aggregated anonymously, and research will be reported on aggregate results. Individual quotations may be anonymously reported from short or long answers in academic publications to emphasise specific feedback provided.

**Mature content warning:** The following interactive web documentary contains material on themes of convict punishment, individual isolation/confine ment, homosexuality, slave labour, and names and images of deceased persons. Viewer must be at least 18 years of age and viewer discretion is advised.

**Aboriginal and Torres Strait Islander people content warning:** Additional content warnings will appear within the web documentary as required in respect to Aboriginal and Torres Strait Islander persons according to the protocols outlined by the Australian Council of the Arts.

**Publication:**

The research results will be published in a PhD dissertation and may also be published in academic journals, a research monograph, and/or conference presentations. The lead researcher would like to acknowledge your expertise and time within her PhD dissertation by including your name and affiliated institution. If you would like to participate anonymously and not be acknowledged for contributing to the review of this iDoc, please indicate in the appropriate box below.

**Declaration:**

- I am 18 years or older and am competent to provide consent.
- I have read a document providing information about this research and this consent form. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction and understand the description of the research that is being provided to me.
- I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity.
• I understand that if I make illicit activities known, these will be reported to appropriate authorities.
• I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.
• I understand that I may refuse to answer any question and that I may withdraw at any time without penalty.
• I understand that my participation is fully anonymous and that no personal details about me will be recorded.
• I understand that if I or anyone in my family has a history of epilepsy then I am proceeding to view content online at my own risk.
• I have received a copy of this agreement. (Note: an e-copy of this web page will be emailed to you once you consent by providing your email address below).

If you have any questions before you provide consent to participate, please contact Nicole Basaraba at Trinity College Dublin, Ireland, at basarabn@tcd.ie.

Expert Survey of the Australian Convicts iDoc

Start of Block: Default Question Block

Q1 Which section(s) of the interactive documentary (iDoc) did you explore?

Q2 How long did you spend interacting with the iDoc (approximately)?
Less than 5 minutes
5-10 minutes
10-20 minutes
20-30 minutes
More than 30 minutes
More than 60 minutes

Q3 Based on the portion you viewed, did the iDoc provide an accurate but brief overview of the historical record for a lay audience? (If not, please specify which areas need attention).

Q4 Does this iDoc present a satisfactorily unbiased account of Australian Convict history? (Please specify your rationale).

Q5 This iDoc presents perspectives less often represented by memory/heritage institutions?

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Q6 Who do you think would be most interested in this iDoc? (Check all that apply)
People seeking a film/movie
Tourists
Students
Heritage institutions (e.g., museums, non-profits)

Q7 How do you think this iDoc could be connected to (if at all) with museums, libraries, tours of the UNESCO sites?
________________________________________________________________

Q8 Was there any specific functionality that could be improved? (Please explain).
________________________________________________________________

Q9 What would you rate this iDoc on the following qualities?

<table>
<thead>
<tr>
<th></th>
<th>Very low</th>
<th>Low</th>
<th>Neutral</th>
<th>High</th>
<th>Very high</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artistic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engaging for a lay audience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Useful for tourists</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q10 How likely would you be to recommend this iDoc to your colleagues, students, friends and/or family?

<table>
<thead>
<tr>
<th></th>
<th>Extremely unlikely</th>
<th>Very Unlikely</th>
<th>Moderately Unlikely</th>
<th>Neither likely nor unlikely</th>
<th>Moderately likely</th>
<th>Very Likely</th>
<th>Extremely likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q11 Would you like to be informed in the future of the publication of any results regarding this project?
Yes
No

End of Block: Default Question Block

Expert Survey Results Dataset

- [https://drive.google.com/drive/folders/1Pk9Fe_52g5yMxAQ-EJHwCgdnlbkaCwIw?usp=sharing](https://drive.google.com/drive/folders/1Pk9Fe_52g5yMxAQ-EJHwCgdnlbkaCwIw?usp=sharing)
Appendix 7 – User Consent Form, Survey, and Results

Research Informed Consent Form

Lead Researcher
Nicole Basaraba, PhD Candidate
School of Languages Literatures and Cultural Studies
ADAPT Centre, Trinity College Dublin
Email: nicole.basaraba (at) adaptcentre (dot) ie

Introduction
This research is being conducted as part of a PhD dissertation in the field of digital humanities and media studies. Interactive digital storytelling is a growing area of research and experimentation especially for cultural heritage topics. An interactive web documentary (iDoc) was created for cultural heritage tourists who are interested in visiting places such as historical sites, museums, archeological sites, viewing artwork, hearing stories and seeing natural landscapes and wildlife.

An iDoc is a form of digital storytelling that aims to "document the real and uses digital interactive technology to realise this intention" (Aston & Gaudenzi, 2012, p. 125). A similar narrative concept you may have previously experienced are “choose your own adventure" novels or Netflix’s Black Mirror: Bandersnatch, where you are given choices of what to explore.

The iDoc prototype being tested in this study is titled "Sentenced to Transportation: A Virtual Tour of Australia's Convict Past" and it focuses on tourism to the 11 designated UNESCO World Heritage Australian Convict Sites.

Procedures of this study
After consenting to participate, you will be provided access to an iDoc about Australian convict history, which is viewable on any digital device.

When using the iDoc, you will be have different navigation options:
1. Self-guided tour: Follow the back (<) and forward (>) arrows or select a button to choose a new narrative path

2. The grey footer menu at the bottom of each page, which includes:
   - Map menu: Choose to explore a UNESCO site locations on an interactive map
   - Text menu: Choose to explore a UNESCO site from the list of 11
   - Stories: Select a specific story that interests you in the footer menu

The self-guided tour is the default navigation option and you may always refer to the map menu to relocate yourself.

Note for the best viewing experience, the following is recommended:

- reduce your browser size if viewing on a desktop or laptop;
- use a landscape orientation if viewing on a tablet;
You may explore as little or as many of the narratives paths as you wish. There is no time requirement or limit. The experience ends when you click the “TAKE SURVEY” link found in the bottom menu of any page, which will take you to a post-interaction questionnaire that will take approximately 10 minutes or less to complete.

You may quit the experience at any time if you do not wish to participate and support this research. The only identifying information collected is the email address you voluntarily provide as a method of your consent to participate, any information you voluntarily provide in the questionnaire, and with Google Analytics activated only on the Consent Form web page, the researcher will only be able to see the country of origin of unidentifiable users. Google Analytics will not be activated on the iDoc itself.

The email address you provide may include your name or you can provide an alternative email address without your real name if desired. The email address is used in place of your (the participant’s signature) and may be used in follow-up communications as needed. For example, a copy of the consent form will be sent to you and/or if you consent to participate but forget to complete the post-interaction questionnaire, an email reminder may be sent. Individual responses will be aggregated anonymously, and research will be reported on aggregate results. Individual quotations may be anonymously reported from short or long answers in academic publications to emphasise specific feedback provided.

Mature content warning: The following interactive web documentary contains material on themes of convict punishment, individual isolation/confinement, homosexuality, slave labour, and names and images of deceased persons. Viewer must be at least 18 years of age and viewer discretion is advised.

Aboriginal and Torres Strait Islander people content warning: Additional content warnings will appear within the web documentary as required in respect to Aboriginal and Torres Strait Islander persons according to the protocols outlined by the Australian Council of the Arts.

Publication:
The research results will be published in a PhD dissertation and may also be published in academic journals, a research monograph, and/or conference presentations.

Declaration:

- I am 18 years or older and am competent to provide consent.
- I have read a document providing information about this research and this consent form. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction and understand the description of the research that is being provided to me.
- I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity.
- I understand that if I make illicit activities known, these will be reported to appropriate authorities.
I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.

I understand that I may refuse to answer any question and that I may withdraw at any time without penalty.

I understand that my participation is fully anonymous and that no personal details about me will be recorded.

I understand that if I or anyone in my family has a history of epilepsy then I am proceeding to view content online at my own risk.

I have received a copy of this agreement. (Note: an e-copy of this web page will be emailed to you once you consent by providing your email address below).

If you have any questions before you provide consent to participate, please contact Nicole Basaraba, Trinity College Dublin, Ireland, at nicole.basaraba (at) adaptcentre (dot) ie.

**iDoc Post User-interaction Survey**

**Start of Block: User Interests**

**Q1 How long did you spend interacting with the iDoc (approximately)?**
Less than 5 minutes
5-10 minutes
10-20 minutes
20-30 minutes
More than 30 minutes
More than 60 minutes

**Q2 Prior to viewing the documentary, had you previously considered travelling within Australia?**
Yes
No

**Q3 What are you most interested in when travelling? (Select one).**
Infrastructure and buildings (archaeological sites, museums, galleries, libraries)
Top attractions and tours, shopping, nightlife
Natural landscape and wildlife (mountains, trails, lakes/ocean, beaches, birds, etc.)
Stories, folklore, history, music, art, local cuisine
Other (please specify):__________________________________________

**Q4 When you plan a holiday, which sources of information do you use? (Check all that apply).**
Published travel guidebooks (e.g., Lonely Planet, Rough Guides, etc.)
TripAdvisor
Travel agency or tour provider
Blogs
Instagram
Twitter
Facebook
Pinterest
Word-of-mouth (e.g., friends, family, other travellers, colleagues)
Other (please specify):__________________________________________
Q5 How much would you rate your knowledge about Australian convict heritage prior to interacting with this web documentary?
Very low
Low
Neutral
High
Very high

Q6 Which site did you explore first? (Select one)
Brickendon & Woolmers Estate
Cascades Female Factory
Coal Mines Historic Site
Cockatoo Island
Darlington Probation Station (Maria Island)
Fremantle Prison
Hyde Park Barracks
Kingston and Arthur's Vale (Norfolk Island)
Old Great North Road
Old Government House (Parramatta Park)
Port Arthur Historic Site

Q7 What made you select this site first? (Please describe which aspect interested you to explore it).

Q8 Which narrative path did you navigate to the most often? (Select one)
Map menu of the 11 sites
Text menu of the 11 sites
Arrow navigation buttons
Text buttons (when provided)
Stories menus (indigenous, female, convict life)
I don't know

Q9 How much did you learn about Australian convict heritage in comparison to your prior knowledge?
None at all
A little
A moderate amount
A lot
A great deal

End of Block: User Interests

Start of Block: iDoc Design & Multimodal questions

Q10 The method of navigation was clear.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree
Q11 I had sufficient freedom to choose which content I wanted to interact with.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

Q12 Which type of content did you enjoy the most? (Select one)
Video
Artworks (e.g., paintings)
Modern digital photography
Historical photography (e.g., black and white)
Maps and blueprints
Text
Audio

Q13 I felt my choices had no consequences on what was presented to me.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

Q14 Was there any type of content you wanted more of? (Select all that apply)
Video
Artworks (e.g., paintings)
Modern digital photography
Historical photography (e.g., black and white)
Maps and blueprints
Text
Audio
Interaction buttons, controls, hyperlinks

Was there any type of content you wanted less of? (Select all that apply)
Video
Artworks (e.g., paintings)
Modern digital photography
Historical photography (e.g., black and white)
Map and blueprints
Text
Audio
Interaction buttons, controls, hyperlinks

Q16 How did the content make you feel?
Bored
Interested
Happy
Sad
Disturbed
Neutral (it did not spark a specific feeling)
Other (please specify): ________________________________________________
Q17 How much heritage information was provided?
Not enough
Some
Moderate
Satisfactory
Too much

Q18 How much practical tourist information was provided?
Not enough
Some
Moderate
Satisfactory
Too much

Q19 Overall, how serious was the content?
Very light
Light
Neutral
Serious
Too serious

Q20 Overall, how dark were the colours used in the design?
Very light
Light
Neutral
Dark
Very Dark

Q21 How likely are you to look at one of the additional resources mentioned in the interactive web documentary (e.g., novel, film, website)?
Extremely likely
Somewhat likely
Neither likely nor unlikely
Somewhat unlikely
Extremely unlikely

End of Block: iDoc Design & Multimodal questions

Start of Block: iDoc Rhetoric

Q22 How likely are you to visit one of the UNESCO World Heritage Australian Convict Sites after viewing this documentary?
Extremely unlikely
Somewhat unlikely
Unsure
Somewhat likely
Extremely likely

Display This Question:
If How likely are you to visit one of the UNESCO World Heritage Australian Convict Sites after viewing this documentary? = Somewhat likely
= Extremely likely
Or = Unsure
Q23 Which of the UNESCO World Heritage Convict Site(s) would you plan to visit (check all that apply)?
- Brickedon & Woolmers Estate
- Cascades Female Factory
- Coal Mines Historic Site
- Cockatoo Island
- Darlington Probation Station (Maria Island)
- Fremantle Prison
- Hyde Park Barracks
- Kingston and Arthur’s Vale (Norfolk Island)
- Old Great North Road
- Old Government House (Parramatta Park)
- Port Arthur Historic Site

Q24 How likely are you to visit other locations in Australia related to convict history (e.g., libraries, museums, related attractions etc.)?
- Very Unlikely
- Unlikely
- Neutral
- Likely
- Very Likely

Q25 If you travelled to one of the Australian convict sites, how likely would you be to share your personal experience/stories online through social media?
- Very Unlikely
- Unlikely
- Neutral
- Likely
- Very Likely

Display This Question:
If If you travelled to one of the Australian convict sites, how likely would you be to share your pe... = Likely
Or Very Likely

Q26 Which social media channel would you use to share your experience/stories? (check all that apply)
- Blog
- Instagram
- Facebook
- Twitter
- SnapChat
- Other (please specify): ____________________________________________

Q27 How likely would you be to recommend this interactive web documentary to friends/family/colleagues?
- Very unlikely
- Unlikely
- Neutral
- Likely
- Very Likely
Q28 Which device did you view the interactive web documentary on?
Desktop
Laptop
Tablet
Mobile phone

End of Block: iDoc Rhetoric
Start of Block: SUS Questions - Usability

Q29 I think that I would like to view this web documentary frequently.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

Q30 I found the web documentary unnecessarily complex.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

Q31 I thought the web documentary was easy to use.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

Q32 I thought there was too much inconsistency in this web documentary.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

Q33 I found the various functions in this web documentary were well integrated.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

Q34 I would imagine that most people would learn to use this web documentary very quickly.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree
Q35 I found the web documentary very cumbersome to use.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

Q36 I felt very confident using the web documentary.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

Q37 I needed to learn a lot of things before I could get going with this web documentary.
Strongly disagree
Somewhat disagree
Neither agree nor disagree
Somewhat agree
Strongly agree

End of Block: SUS Questions - Usability

Start of Block: Demographic Information

Q38 Which country were you born in?

Q39 How old are you?
18-20 years
21-29 years
30-39 years
40-49 years
50-59 years
60+ years

Q40 What is the highest level of education you have (including those currently in-progress)?
High School (e.g. Leaving Certificate)
Diploma/Certificate from technical or trade school
Undergraduate degree
Master's degree
Doctorate degree

Q41 Do you have any other comments or feedback for the researcher?

End of Block: Demographic Information

User Survey Results Dataset

- https://drive.google.com/drive/folders/1Pk9Fe_52g5yMxAQ-EJHwCgdnlbkaCwIw?usp=sharing
Appendix 8 – Associated Publications

Book Chapters


Journal Papers


Conference Proceedings


  1. “A Framework for Creative Teams of Non-fiction Interactive Digital Narrative.”
     DOI: 10.1007/978-3-030-04028-4_11
  2. “Co-constructing Cultural Heritage Through a Web-based Interactive Digital.”
     DOI: 10.1007/978-3-030-04028-4_76

Works in Progress