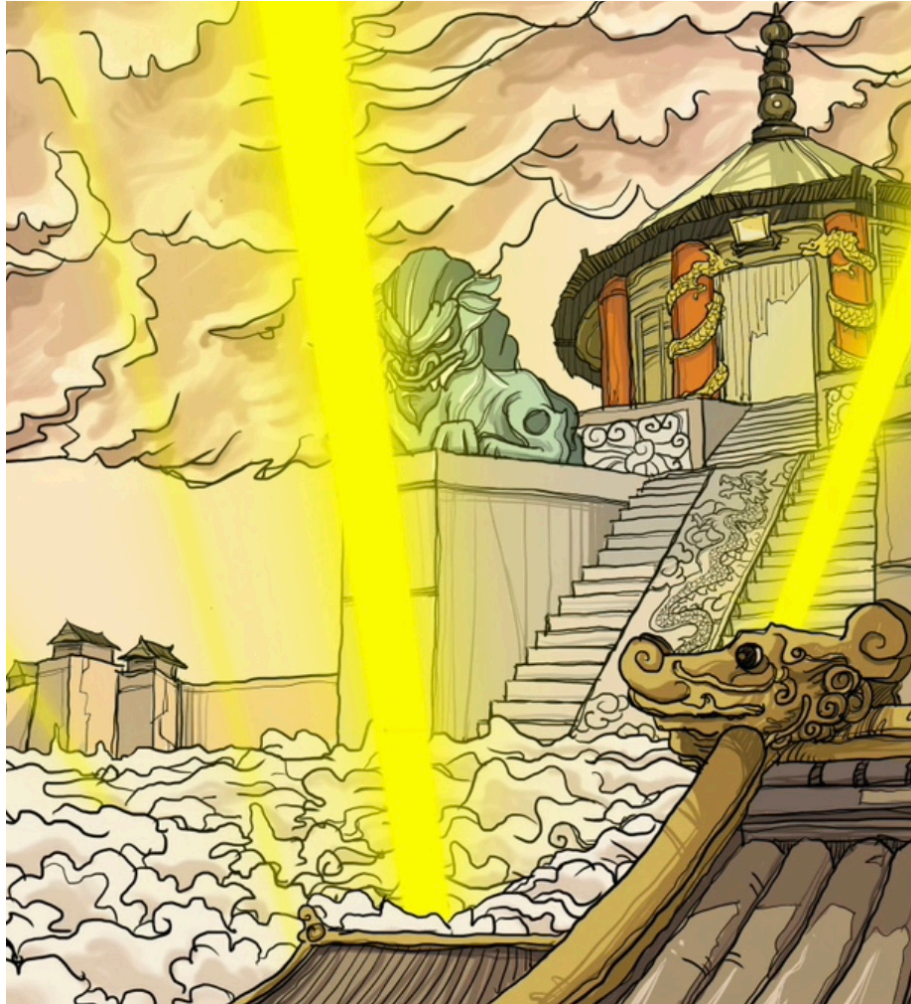


Havoc in Heaven

A digital picture book experiment



Guojie Ju

This exegesis is submitted to the
Auckland University of Technology for the Degree of
Master of Art & Design

2018

School of Art & Design

Table of Contents

Attestation of Authorship	03
Acknowledgements	04
List of Figures	05
Abstract	08
Introduction	09
Contextual Review	
Images and words	10
A History of Picture Book Illustration	13
The Digital Age	15
Current Examples	17
The Story of Monkey King & Previous Work	21
Research Design	
Methodology, Methods & Process	24
Heuristic Inquiry	25
Practice-led Research	26
Summary	28
Practice and Procedure	
Introduction	29
Sketching---Sketchbooks, Animatic	29
Drawing---Procreate, Photoshop	36
Animating & Composing---After Effects, Adobe Illustrator	37
Vocalizing---Garageband, After Effects, Recorder	43
Fixing & Presenting---After Effects, iBook Author	45
Summary	45
Findings and Results	
Animated Illustration	47
Layout	51
Material	55
Sound	57
Interaction	58
Integrating and Improving Reading Experience	58
Conclusion	60
References	62

Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the Acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signature: 

Date: 16/05/2018

Acknowledgements

I would like to express my sincere gratitude to my supervisor, Peter Gilderdale. His support, guidance and experience of learning played a significant role in the successful completion of this dissertation. Although we focus on different design areas, what he is good at is often something I ignored in my work. Due to his valuable suggestions, my work has become more complete. In addition, his comments and reviews of my dissertation show the patience and responsibility of a good supervisor.

I wish to recognise the Auckland University of Technology for the provision of studio facilities.

Finally, I would like to convey my deepest gratitude to my family and friends. Without the love and support of my family or help from my friends, the project would not have been possible.

List of Figures

Figure 1: Carroll, L. (2012). *Lewis Carroll's Adventures in Wonderland: With Artwork by Yayoi Kusama* [Image]. Retrieved from <https://www.pinterest.co.uk/pin/362891682465526953/>

Figure 2: Golden, J. M. (1990). *The narrative symbol in childhood literature: Explorations in the construction of text* (Vol. 93). Walter de Gruyter. (Drawn from text).

Figure 3: Crivelli, T. (1477). *Ptolemy's Cosmographia* [Image]. Retrieved from <http://www.historyofinformation.com/expanded.php?id=1751>

Figure 4: Crane, W., & Evans, E. (1874). *The Alphabet of Old Friends* [Image]. Retrieved from https://en.wikipedia.org/wiki/File:Crane_toybook.jpg

Figure 5: Rowling, J. (2017). *Harry Potter and the Sorcerer's Stone: Illustrated [Kindle in Motion]* [Image].

Figure 6: Rowling, J. (2015). *Harry Potter and the Sorcerer's Stone (Enhanced Edition)* [Image].

Figure 7: Liang, X. (1970). *The Monkey King (comic)*.

Yan, Q. (2016). *The Monkey King (opera)*.

Wan, L. (1961). *Havoc in Heaven (animation)*.

Zheng, B. (2016). *The Monkey King (movie)*.

Figure 8: Ju, G. (2017). Sketchbook.

Figure 9: Ju, G. (2018). Diagram of own research design.

Figure 10: Ju, G. (2018). Diagram of own research design.

Figure 11: Ju, G. (2017). Sketchbook.

Figure 12: Ju, G. (2017). Sketchbook.

Figure 13: Ju, G. (2017). Sketchbook.

Figure 14: Ju, G. (2017). Sketchbook.

Figure 15: Ju, G. (2017). Sketchbook.

Figure 16: Ju, G. (2017). Sketchbook.

Figure 17: Ju, G. (2017). Sketchbook.
(2018). Illustration from huaban.com [Image]. Retrieved from
<http://huaban.com/search/?q=yama+illustration>

Figure 18: Ju, G. (2017). Sketchbook.

Figure 19: Ju, G. (2017). Sketchbook.

Figure 20: Ju, G. (2017). Sketchbook.

Figure 21: Ju, G. (2017). Digital drawing.

Figure 22: Ju, G. (2017). Digital drawing.

Figure 23: Ju, G. (2017). Working in studio.

Figure 24: Ju, G. (2018). Typography.

Figure 25: Ju, G. (2018). Typography.

Figure 26: Ju, G. (2017). Test.

Figure 27: Ju, G. (2017). Test.

Figure 28: Ju, G. (2017). Test.

Figure 29: Ju, G. (2017). Test.

Figure 30: Ju, G. (2017). Test.

Figure 31: Ju, G. (2017). Test.

Figure 32: Ju, G. (2018). Test.

Figure 33: Ju, G. (2017). Test.

Figure 34: Ju, G. (2018). Recording.

Figure 35: Ju, G. (2018). Fixing.

Figure 36: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Figure 37: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Figure 38: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Figure 39: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Figure 40: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Figure 41: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Figure 42: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Figure 43: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Figure 44: Ju, G. (2017). Animation in own experiment: *Havoc in Heaven*.

Figure 45: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Figure 46: Osborne, M. (2015). *The Little Prince* [Film]. Paramount Pictures.

Figure 47: Ju, G. (2018). Animation in own experiment: *Havoc in Heaven*.

Abstract

To find the new expression of digital book illustrations, this research project used an experiment of a digital picture book, *Havoc in Heaven*. With the development of digital technology, digital books have exerted a crucial role on the transformation of storytelling. Compared with physical books, digital book illustrations have advantages in terms of interactivity and diversity. However, most of the current digital books have not yet fully reflected these advantages. Therefore, the current study aims to focus on exploring more flexible and interesting expressions of animation illustrations in digital books with the purpose of improving readers' reading experience.

The methodology in this research is influenced by theories of heuristic inquiry and practice research. In this research, the experiment of the digital picture book is a main part of the practice. The procedure of the practice is formed by sketching, drawing, animating, composing, vocalising, fixing and presenting, and the cooperation of making, thinking and learning is the key for each process. In addition, my personal experience could also influence the whole practice.

Through the experiment, this dissertation discusses the expression of digital book illustration from five aspects: animation, layout, materials, sound and interaction. The result indicates that the breakthrough and innovation of this project is mainly reflected in three points. Firstly, it enables emphasising and explaining the specific detail in texts through animation. Secondly, loosening the traditional boundaries between illustration and text is the biggest contribution of this project. The animated illustration can break the limitation of the frame and interact with the text. The flexible composition between images, words and frames is the most distinct visual trait in this digital picture book. Finally, cogitative selecting and composing of various material elements, sound effects and interaction could enrich the reading experience. These findings in practice might show the new way to express book illustration on a digital platform.

Introduction

This dissertation seeks to examine how book illustration in the digital medium can create enhanced reading experiences. The research question is explored through the process of designing a series of animated illustrations for a Chinese traditional mythic story: *Havoc in Heaven*.

With the development of digital technology, digital books have played a crucial role in the transformation of storytelling. The number of eBook readers has been continually increasing. The convenience of eBooks meets the need of people who want a fast reading experience in a fast-paced lifestyle but ignores those who are interested in book illustration and seek a different reading experience. Compared with physical books, digital book illustration is superior regarding interactivity and multiformity. Nevertheless, most current digital picture-books have not fully reflected these advantages. Therefore, the aim of this research is to focus on exploring a more flexible and interesting expression of animated illustrations in digital books to improve the reader's reading experience.

This dissertation positions the creative practice within a theoretical and methodological framework, which is divided into four main parts. The first part presents a contextual review of the proposed research, which is research about the area of book illustrations and digital books, including the relationship between images and words, a history of book illustration and a comparative study of e-Books. In this part, some current examples of digital picture-books will be analysed and my previous work will also be stated. The second part explains the methodology and methods in the research design. It involves two main theories including heuristic inquiry and practice-led research, which also illustrates how the outline of the research process is formed, based on these two theories. The third part records the development of my practice and the last part discusses how the digital animated illustration enhances the reading experience through animation, layout, materials, sound and interaction according to the practice.

Contextual Review

Images and Words

The visual system appeared before writing systems (Nugent & Frederico, 2013). From the earliest human communications, like cave paintings, through to later forms like church murals, and stained-glass windows, there is extensive evidence testifying to the importance of pictorial representation (Whalley, 1996). After the development of printing, because images can serve to “expand, explain, interpret, or decorate a written text”, they were more important to text and were widely used in books (Bodmer, 1992). At the end of the nineteenth century, the visual image became increasingly significant. Kress and Van Leeuwen (1996) stated that a picture changes the way we understand the world, exerting a great influence on how we form ideas.

Picture books which combine illustration and text, are seen as the “seamless work of these two modes of presentation” by Maurice Sendak¹. Studies of picture books have been divided into two different types including those that are more artistic, and those that rely more on literary content (Nikolajeva, 2003). However, both types have flaws. The first type pays attention to artistic aspects, including colour, shape, line and space, ignoring the textual component (Ciancido, 1970). The second type treats picture books as a kind of literary book, which explores content but often without considering the importance of interaction between illustrations and text (Keifer, 1995). Although this research uses book illustrations and thus will also focus on the artistic aspects, it aims to avoid the defects summarised in previous studies. Lawrence Sipe (2011) argues that picture books are a created aesthetic object, through combining art and language . However, too much emphasis on art expression could detract from the book’s content. Figure 1 presents an example of a picture book which is too artistic. The illustration in this picture book is drawn by Japanese artist Yayoi Kusama², who is good at using the pattern of “point”. Although the illustration is attractive and fascinating, there is less

¹ **Maurice Bernard Sendak**, an American illustrator and writer. His famous book, published in 1963, was *Where the Wild Things Are*.

² **Yayoi Kusama**, a Japanese installation and sculpture artist, who also works in painting, fashion, poetry, fiction and other arts.

connection with the text. For example, there is no reason that why so many “point” patterns can be found as decoration in the whole book.

IMAGE REMOVED FOR COPYRIGHT REASONS

Figure 1: *Lewis Carroll's Adventures in Wonderland: With Artwork by Yayoi Kusama* (2012).
<https://www.pinterest.co.uk/pin/362891682465526953/>

Besides, some of the illustrations are too abstract so it is hard to understand which part of the content it refers to. According to Whalley, good book illustration can add or enhance depth to the text, while a bad illustration lacks relevance to the text (Whalley, 1996). *Adventures in Wonderland* may be considered as a great example of expressive illustrative art in a book rather than a great picture book. Therefore, the proposed research will explore the expression of book illustration as well as the relationship between images and words.

Joanne Golden distinguished five types of interaction between images and texts (1990): “(1) the text and pictures are balanced; (2) the text depends on pictures; (3) the picture depends on texts; (4) the text carries the primary narrative; (5) the illustration carries the primary narrative (Figure 2)”. The practice in the current study aligns most closely with the third type, that is the illustration depends on the text and enhances the text.

Book illustration is an appendant art of the book text (Zheng, 2003) and thus the text still occupies the main part in my practice of picture book. Margaret Meek considered that words and pictures interanimate each other (1992), which is consistent with the view of David Lewis (1996). Nodelman and Doonan believed that images and texts are interinhibitive. Words struggle to convey the detail that a picture gives, while a picture

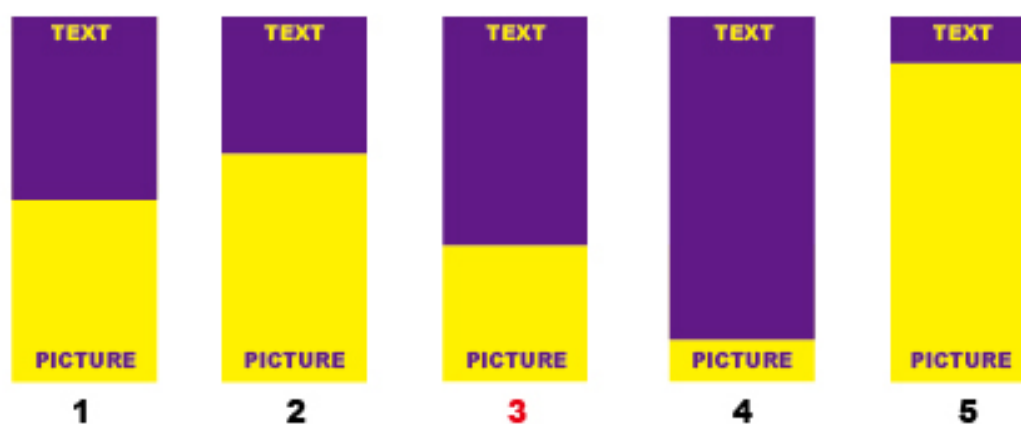


Figure 2: The five types of interaction between images and texts distinguished (1990).

struggles to give the specific information that words convey easily. Both have limits, and are in turn limited by the other. (Nodelman, 1988). Words always push us to keep reading, but pictures can attract the attention to make us slow down (Doonan, 1993). According to these two observations, images and words restrict each other. Nikolajeva (2000) has comprehensively summarised the nature of the relationship between images and texts: symmetry, complementarity, enhancement, counterpoint and contradiction. In terms of my research, I consider images and texts as complementary: the word shows the fluent story with accurate description and the illustration presents the text with various attractive forms. They all have a function that the others do not have. In addition, although the book illustration has a close connection with text, it also has its own “style” (Zheng, 2003). Nodelman defined “style” as being “the effect of all the aspects of a work of art considered together,” (1988). That depends on the taste of artists and illustrators. Different individuals have different art styles, and these unique styles are the most fascinating part for book illustration.

A History of Picture Book Illustration

Illustration has always had a relationship to the medium of reproduction. In the early 15th century, woodcut was used in illustrated books (Meggs, 2006). However, the early woodcuts were crude and not suitable for presenting detail and thus lots of book illustration types were restricted. In 1477, the first book to contain print maps and be illustrated by engraving rather than woodcuts was printed (Figure 3) (Landau & Parshall, 1994). Since then, the woodcut has been gradually overtaken by engraving

IMAGE REMOVED FOR COPYRIGHT REASONS

Figure 3: *Ptolemy's Cosmographia* made by Taddeo Crivelli³ in 1477.
<http://www.historyofinformation.com/expanded.php?id=1751>

and etching, which could present detail better. Most book illustrations were created for adults before the 17th Century (Kiefer, 2010), and they are usually used for religious productions, atlases, technical works and scientific books. With the development of improved printing technologies, picture books were widely published, and children's books became popular in the 18th and 19th centuries (Pino, 2014). According to Whalley, the 19th century was the peak of British book illustrations (1996), due to the technology

³ **Taddeo Crivelli**, an Italian painter of illuminated manuscripts.

of the printing press and colour printing. In the 1850s, colour became much more widely used, especially in the popular “toy books” (Figure 4), which were also known as “paper-covered picture books” (Whalley, 1996). During the 18th and 19th centuries, it seemed

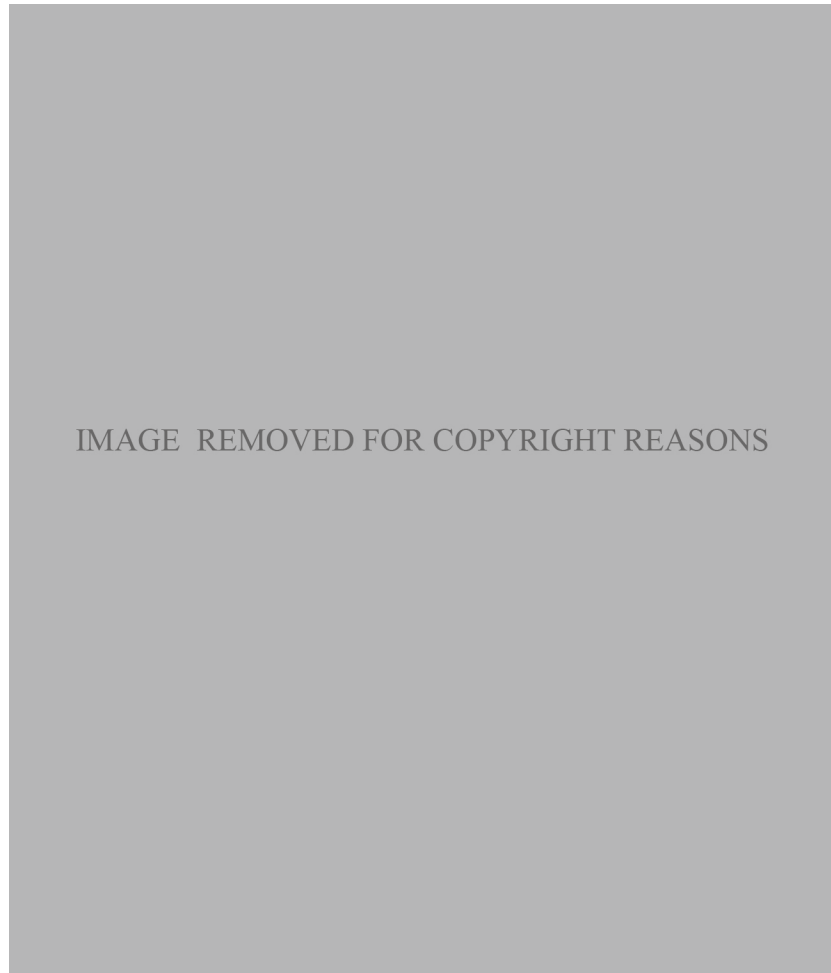


Figure 4: *The Alphabet of Old Friends* published in 1874, illustrated and designed by Walter Crane, coloured and printed by Edmund Evans.
https://en.wikipedia.org/wiki/File:Crane_toybook.jpg

that the main audience of picture books turned from adults to children. However, in the 20th century, the intellectual range and sophistication of images in modern picture books increased, with some of them needing a deep understanding drawn from a range of experiences, which are beyond a lot of young children (Kiefer, 1995). Nowadays, the boundary between young audiences and adult audiences of picture books is becoming increasingly blurred. Newer technologies such as photogravure, chromolithography and offset lithography revolutionised book illustration in the 19th and 20th centuries. In

the 21st century, a different technology is making a similar impact. Book illustration is currently enhanced combined with animation, videos and music in highly interactive digital platforms (Hillesund, 2010). This history of picture book illustration provides two justifications for the current research. Firstly, every new development of technology provides opportunities to improve the quality of book illustration and thus digital technology provides a chance to expand the range of digital book illustration. Secondly, the audience of picture books has changed from adults to children, and now, both adults and children are the audience, which means the readership of picture books has expanded, so the range of application of this research will be wider (the application would not be limited to children's literature).

The Digital Age

From the start of the twenty-first century, many texts have been presented in digital media, according to Ruth Page and Bronwen Thomas (2011). The hypertexts of the 1980s published on CD-ROM have been seen as early "born digital" narratives. Although lovers of traditional books saw the digital as creating havoc in their literary heaven, the internet drove the move to digital. By the end of the 20th century, people had become more familiar with how to obtain information from the internet, and in 2008, the Amazon Kindle led the way for people to read books online. Because of the appearance of mobile, light, low-power-consuming screen technology and strong storage capacity, lots of readers preferred the digital books to physical books (Classon, 2016). In early hyperfiction, the textual content was dominant, but since the development of multimedia software, such as Adobe's Flash in the mid-1990s, words are no longer as prominent, with the use of graphics and animation to tell the story, or as part of interactive methods (Page & Thomas, 2011). The multiple-media digital age is coming, which provides the best context for the exploration of digital picture books.

In the digital age, illustrated e-books are not only becoming progressively more popular, but also are more convenient to use. Through animated and interactive digital content, designers can enhance reader's reading experience in an immersive manner (Sargeant, 2015). Previous studies on digital picture books were mainly centred on two aspects: interactivity and multiformity. The interaction in e-picture books can improve readers' comprehension of the text and shorten the relationship between readers and stories

(Nugent & Frederico, 2013). The powerful interactivity in digital books changes the traditional way of reading in physical books. Ryan stated that the screen is a stage, and when the reader becomes a character who plays a role on the stage or as an audience member to explore the scenes – the interaction between the user and the digital book produces a plot or action (2002).

According to Katie Salen and Eric Zimmerman (2004), interaction is a process of action and effect, which has a close relevance with game design. Digital books, according to Junko Yokata and William Teale (2014), can combine with game design and filmic (animated) elements. The discipline of game design can be divided into two groups: the ludologists and the narratologists (Frasca, 2001). The ludologists emphasise the action of playing in games (Juul, 2003), while the narratologists pay more attention to the narrative story through game interaction (Jenkins, 2004). In my research, I tend towards the theory of narratology. The telling of the story/text is still the primary core for digital picture books, which is also the nature of books. The interaction, like the action in games, can be formed based on the fluent narrative story. The digital picture book is a kind of “transmedia storytelling”. A “transmedia story” is a text that operates across multiple media platforms and gathers distinctive and various new expressions as a whole, as proposed by Henry Jenkins (2006). Modern digital books are not only interactive, but also contain a range of different media elements (Sargeant, 2015), such as digital illustration, animation, moving images, music and sound effects.

Although the memory for moving pictures is much more effective than memory for static pictures (Goldstein, Chance, Hoisington & Buescher, 2002), the animation with strong moves may not provide permanent but transitory information (Höffler & Leutner, 2007). This indicates that it is hard for viewers to catch details at a time when viewing dramatic animations. Nevertheless, Smeets and Bus (2013) stated that motion in book illustrations has two advantages: enhancing text comprehension to match relevant details and attracting more visual attention. Since the 19th century, book designers and artists had tried to produce motion and animation in picture-books by paper engineering (Nugent & Frederico, 2013), such as pop-up books, where the motion and animation are created by turning a page or pulling a tab (Carter & Diaz, 1999). Nowadays, the motion and animation can be easily presented in digital picture-books by animated

illustration. Additional audio elements in digital books are distinctly perceptual and attract and sustain attention more easily (Barr, Zack, Garcia & Muentener, 2008). When people hear a sound, they associate the scene with the reality they have experienced or the film scenes they have watched, and they can also direct and concentrate their imagination and attention as a listener (Moore, 2016).

The combinations of these multiple medias can create a rich sensory experience for readers, which is the advantage of digital picture books (Madej, 2003). The proposed research will continue to explore digital picture books through interactive and multiform aspects, which yet have more detailed and specific making and thinking in terms of book illustrations.

Current Examples

Here, I present four digital books as examples of the current state of exploration in digital book illustration including *The Tale of Peter Rabbit* (App. in apple store), *The Irons* (Madefire⁴) and two different versions of *Harry Potter* (iBook and Kindle). In this section, I will analyse these digital books in relation to how they operate within a digital platform. Then, my own digital book illustration practice will be considered.

The Tale of Peter Rabbit

The Tale of Peter Rabbit is a well-known children's literature written by Beatrix Potter. Currently, it is displayed through a digital application. This digital book can interact well with readers. The leaves fall down when tapping the tree and the rabbits laugh and shake when touching them. Besides, some images pop out and move if pressing some special buttons. Due to the digital technology, this book becomes more interesting and interactive, but the effects of animation are too simple and boring when compared with the two versions of *Harry Potter*.

The Irons

The Irons is a motion comic in Madefire, which is an application for digital comic and motion books. Although it is a motion comic, we can just see the movement of objects

⁴ **Madefire**, an App for reading digital motion books and comics.

and the change of the picture perspective. However, since it does not show any motion detail, like wiggling hair or twinkling eyes, the whole picture therefore appears stiff. Nevertheless, it is notable for its use of audio elements. Because this is a suspense and horror story, the sound and background music create a scary soundscape, directing audience emotion in order to bring them into the plot quickly.

Harry Potter

When I was young, the first time I saw the moving pictures in the magic newspaper in the movie *Harry Potter*, I wondered about the amazing magic. Several years later, digital technology has made the magic come true. *Harry Potter* has been published as two motion versions in Kindle (Figure 5) and iBook (Figure 6) respectively. The motion illustration in these two books is better and more delicate, which seems more interesting and attractive than normal digital books, yet neither of the two books added the audio element. Most animated illustrations in Kindle's *Harry Potter* take up a page space alone without any text, which looks separate from the whole book. iBook's *Harry Potter* does better compositionally, which combines text and illustration more cohesively. However, the illustrations are too limited by the frame.

IMAGE REMOVED FOR COPYRIGHT REASONS

Figure 5: *Harry Potter* in Kindle. The cover of the book.



IMAGE REMOVED FOR COPYRIGHT REASONS

Figure 6: *Harry Potter* in iBook. P212

Through comparing and analysing these four digital books, there are several characteristics of illustration in a digital book that need be considered, for instance, interaction, audio elements and movement. Animated illustrations in these four books have more ability to enhance both visual and functional aspects, such as using short animation to explain the text. Making the relationship between illustration, frame and text more interesting and creative is also important. Marantz (1977) reminded us that whole picture books, not only the illustration part, are art objects. And Jenkins stated that when a book transfers into digital media, the affiliated text also needs to be designed (2006). As a book illustration designer, the frame and text also need to be considered. These are the types of issues that I will explore in my practice. The current project retains the advantages of the current digital picture books but seeks more creative ways to present the illustrations.

The Story of The Monkey King and Previous Work

I have chosen a part of *The Monkey King, Havoc in Heaven*, as the content of my practice. *The Monkey King* is a famous Chinese myth/story, which has been made into different versions, such as literature, comics, traditional operas, animations and films (Figure 7). *Havoc in Heaven* describes how the main character, the Monkey King, rebels against the Jade Emperor of Heaven to gain freedom. He is portrayed by Chinese literature as a hero, and his indomitable spirit reflects the faith of the Chinese people. Therefore, the story of *Havoc in Heaven* has played an important role in Chinese culture. I selected this text because myths provide a good basis for developing an imaginative world. Besides, more importantly, the story of *Havoc in Heaven* spreads the courage of breaking the rules, which matches the theme of the research, disrupting the traditional reading patterns based on a new way of digital illustrating.

IMAGE REMOVED FOR COPYRIGHT REASONS

Figure 7: The comic of *The Monkey King* drawn by Liang Xiaosheng in the 1970s (upper left), the Monkey King played by Yan Qingu in the opera of *The Monkey King* (lower left), the animation *Havoc in Heaven* directed by Wan Laiming in the 1960s (upper right), and the film *The Monkey King* directed by Zheng Baorui in 2016 (lower right).

<http://www.littleducks.cn/book/show-photo.php?id=6831>

<https://cfile.haokan.com/f/8e965735cdac1c9fade1e8bf4e765c03>

<http://www.xijucn.com/upimg/userup/1601/040Z533M07.jpg>

<http://img1.gting.com/ent/pics/hv1/181/158/2017/131195896.jpg>

In terms of text, I wanted to select an existing translated version. After searching and comparing, finally I have used the story *Havoc in Heaven* retold by Aaron Shepard⁵. The plot of this version is very close to the original with a strong pictorial sense, which suits animated illustration.

Most of my previous work on the AUT course before this specific research project was about creating an image of this myth's world. I drew lots of sketches for character design and setting design, which helped me to build a visual understanding of the story in my mind, forming the basis for the illustration. Building on this basis, I added some cultural elements in the works to enrich the settings and characters. For example, the image of the Pavilion of the Jade Pool, where a great banquet is held in the story, has been designed as a combination of an ancient goblet and a phoenix. The ancient goblet stands for celebration and the phoenix is the symbol of the Lady Queen Mother, who is the holder of the banquet (Figure 8).

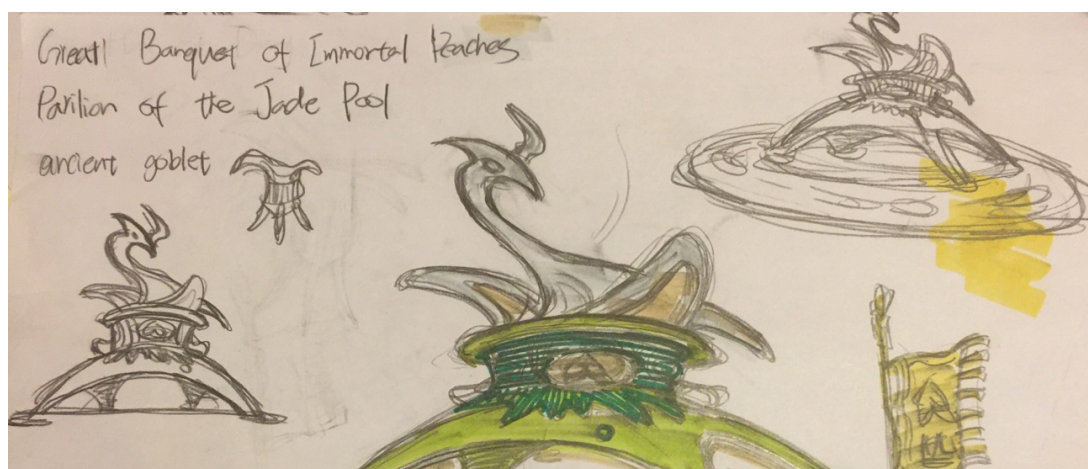


Figure 8: The sketch about Pavilion of the Jade Pool.

I also conducted tests involving digital media design, such as expressing the image of the Monkey King through a short video. The Monkey King is a character full of rebellious spirit, and I wanted to present this feeling of the Monkey King without any description. The closest thing I can connect with rebellious spirit is rock music and thus

⁵ **Aaron Shepard**, an author whose specialty is retelling folktales and other traditional literature from around the world. *The Monkey King: A Superhero Tale of China* was published as a mini-novel by Skyhook Press in 2008. Resource from: <http://www.aaronsherp.com/stories/036.html>.

I made a rock style monkey puppet and played a short stop motion animation with a rock music background for leaving audience an impression of “a crazy rebellious monkey”. Because this practice was not related to book illustration and the work’s style is different, it may not be shown in the final exhibition of this research. However, it started my study in digital media design, and tested the cooperation between the audio element and animated element in digital media, which was beneficial for the later experiments in the digital picture book.

Research Design

Methodology, Methods and Process

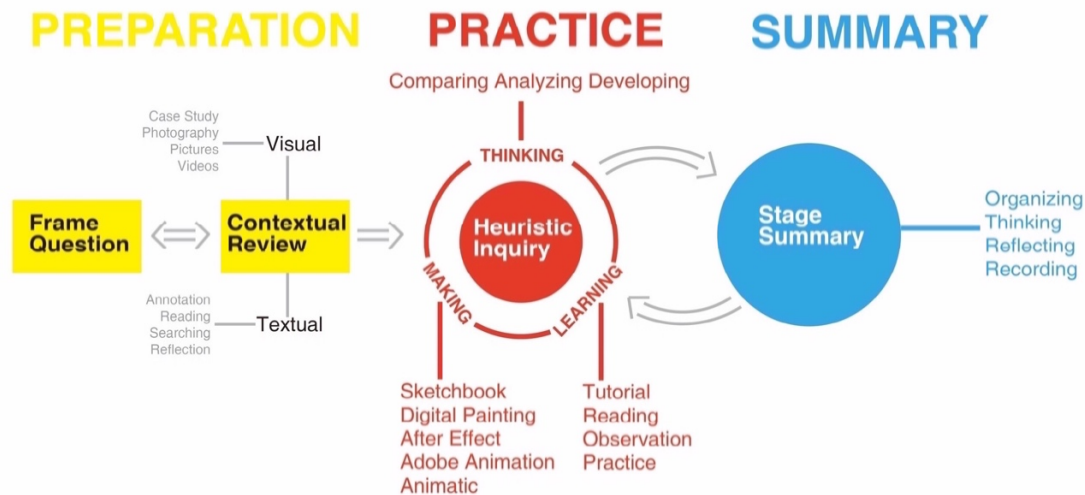


Figure 9: Methodology, method and process in the research.

Figure 9 shows the methodology, methods and process in this research. My methodology is influenced by theories of heuristic inquiry and practice-led research. Methodology is a system which leads the whole research containing multiple methods or techniques to achieve and test ideas in different stages. In addition, a variety of methods and techniques have been applied in this research, such as case study, sketchbooks, digital painting and After Effect. If methodology is a tool kit, methods are the tools which are used to deal with a specific problem. My research is divided into three simple processes: preparation, practice and summary. Contextual review is the main method in the preparation process. Realising the background of the question and connecting relevant works is usually the first step in conducting a research. Additionally, this process also involves historical research. Muratovski mentioned in *Research Methods for Designer* (2015) that historical research handles “change”, and I consider it as “innovation”, which is used for two main aspects in my research: helping me position my research question in relation to previous studies and guiding the direction of the current project. My research concerns digital book illustration, which is a visual project and constantly asks me to make practices to test and explore ideas using multiple methods. Since practice makes up a large part of the research and can be

more important, I believe that a practice-led research is an appropriate theory for this project. As stated by Hazel Smith and Roger T. Dean in the book *Practiced-led Research, Research-led Practice in the Creative Arts* (2009), practice-led has a distinctive trajectory of inquiry, and can be seen as the best way to show conceptions in the visual art area. Practice, as a main part of my research, plays a significant role as the link in the whole process. Afterwards, the summary process stands for the end of a stage. Reflective thinking is especially important in this process. Schön presented the notion that reflecting, reviewing, analysing and evaluating can provide insights for improving practice, while reflections are ladders between each action or stage in the book *The Reflective Practitioner* (1983). Therefore, the summary process is the ending of one stage and the beginning of another stage.

Heuristic Inquiry

Heuristic inquiry is a theory developed by psychologist Clark Moustakas. Heuristics is the core spirit of my research. Moustakas explained his theory of heuristic inquiry in his book *Heuristic Research: Design, Methodology and Applications* (1990), and I picked up three points from the book which could influence my research design: intuition, learning and challenge.

Different from other studies aimed to prove a hypothesis at the beginning, when I formed the question, I did not know the method or final result of my project, so I just began the practice with my own experience and intuition. Intuition is a significant characteristic of seeking knowledge (Moustakes, 1990). Because my research relates to a visual project that can be considered as subjective, here interest and intuition are the best engine for exploration. Moustakas said that solving a problem means finding a way, and methods of heuristic research are open-ended (1990). It resembles a ship sailing in the mist, finding different ship routes to realise these areas, exploring with intuition and discovering the new land.

However, researchers can not only have intuition. We also need the ability of self-learning. Self-learning becomes a big part of the heuristic inquiry process. Initially, when I designed my research, practice-led research was the only theory I referenced, so there are just “making” and “thinking” in my practice process. However, after

reading the text related to heuristic inquiry, I was aware of the importance of the learning in the practice and added it in my methodology diagram. In the figure, it forms a circle around the theory of heuristic inquiry, learning-making-thinking. There are three kinds of learning in my practice. The first one is learning with goals, which usually occurs when an idea or concept comes out, but I did not know how to express it with software. For example, I wanted to present the material of a fluttering flag using After Effects, and I searched online tutorials and learned the skill for solving this specific technical problem. The second one refers to learning without goals. This means the research is affected by other researchers' experiences or works advertently. For example, adding a sound element in my animated illustration is influenced by audio comics. The third one is learning from one's own practice. The main aim in this research is, through making and thinking in the practice, learning the experience to find new ways to present book illustrations in a digital book; something which matches the core of "practice-led" theory. In addition, self-reflection also plays a critical role in self-learning. Self-reflection can both polish the knowledge or skill learnt from other places and adapt and modify what is learnt through the practice and developing and completing the project. In heuristic research, researchers are required to be curious, receptive and reflective and all facets of experiences or things may be useful for the research.

Challenges exist in all research. The aim of heuristics is discovery, and the challenge in heuristic inquiry is integration. Once the researcher has mastered knowledge (technique) of the materials exploring the question, it is challenging to put elements and cores into a creative synthesis (Moustakas, 1990). In the current research, the biggest challenge was integrating multiple expressive elements in digital book illustrations to lead readers' emotions.

Practice-led Research

Practice-led research and practice-based research usually appear together in a research methodology. According to Lind Candy (2006), an artefact is the basis of the investigation in practice-based research, and the new understanding (finding) led from practice is primary in practice-led research. One emphasises artefacts, and another

focuses on new understanding (finding). Both of these things are necessary in a practice research.

In my research, I have spent considerable time on making artefacts, which is significantly important. Maarit Mäkelä (2007) showed that artefacts play a significant role in practice-led research in *Knowing Through Making: The Role of the Artefact in Practice-led Research*. The article mentioned that there are two functions for artefacts in practice-led research. Firstly, it can show the direct visual work. Although concepts and ideas of projects in the art and design area are usually difficult to explain with pure text, artefacts make it easy and clear. Secondly, it can support the conception. Without the artefact, practice research is just an assumptive theory. Artefacts not only make the conception more credible, but also prove the approach through exploring the research question. Therefore, the artefact can be both an object created by a designer during the process of research and a method of exploring the subject of the current research. From this perspective, artefacts are essential results of the art and design process, which have an even more crucial role in practice-led research.

Practice-led research cannot be simply seen as “practice as research”. “Practice as research” most often means that researchers see little or have no need for any statement of the research question, believing that the practice should explain itself. However, “practice-led research” needs both practice and summary, which is a process of making and thinking. The most useful aspect in practice-led research for my research methodology is the transition between the practice and finding. The purpose behind practice-led research is the advancement of knowledge within practice (Muratovski, 2015), knowing through making and transferring practice to finding. In addition, “practice-led research” is also a “research-led practice”. Practice (the act of making) is, within the field of research, regarded as a result of a process of thinking, according to Mäkelä (2007). Before the practice, researchers usually collect enough relevant theories and contextual research as a “contextual review”, and then form the beginning assumptive idea. The process of practice achieves the assumptive idea as well as exploring the new finding, so practice-led research is the repetition of “thinking-making-thinking”. As shown by the diagram earlier, the process of “contextual review-practice-summary” is the same as the process of practice-led research.

Summary



Figure 10: Two important loops in the research.

Through summarising this chapter, heuristic inquiry and practice-led research are two main theories in the methodology part. In brief, this research is a kind of practice-led research with heuristic spirit. There are two important loops in my research design (Figure 10). Practice-led research implies the relationship between making and thinking, and heuristic inquiry theory mentions the importance of self-learning, forming the circle in the practice process, “learning-making-thinking”. The three actions in the loop of practice do not have a settled order, but they are co-existing. The second loop repeats “practice process-summary process” continuously, and it also stands for the development of stages. According to the diagram (Figure 9) at the beginning of the chapter, the process of this research has a start but never has an end and my exploration of digital book illustration is just a phasic research.

Practice and Procedure

Introduction

In this section, I explore the ideas and approaches used in developing my research. It documents several processes: sketching, drawing, animating and composing, vocalising, and fixing and presenting. These processes formed the part of practice in this practice-led research, and the practice is heuristic. Based on personal intuition, it uses the previous experience and skill of illustration and learns something new to develop the research. The practice has the outline of the direction before the start, but some ideas were formed during the procedure. Making, thinking and reflecting can be seen in the whole process.

The nature and selection of these processes were affected by dividing the animated illustrations into two types: dramatic and understated. The dramatic one is more like a few seconds of short animation with consecutive movements. The understated animated illustration is between the static illustration and animation, which does not have strong moves but smooth and minor actions. At the beginning of my practice, the idea of dramatic animated illustrations had not emerged prior to designing the illustration for the scene where the “Monkey King used spells to turn himself into a unicorn”. The understated animation could not show the process of the transformation from a monkey to a unicorn. Since then, I realised the importance of dramatic animation to express the process of an action. Therefore, in the procedure of the practice, sometimes different software and methods would be used for two different types of animated illustration.

Sketching – Sketchbooks, Animatic

Sketchbooks have already been seen as an essential tool for designers since at least medieval times (Clayton & Wiesenthal, 1991). They are usually employed for recording observed things and collecting ideas. Clayton and Wiesenthal thought that a work is generally undertaken by sketching. The beginning process of my project was sketching, and my sketchbooks were divided into four stages: observing, expanding, creating and setting.

Sometimes, sketching makes us become an observer (Smy, 2012), and the observation from reality can help illustrators discover more details (Uglow, 2009). At the beginning of my project, because the main character of the story is a monkey, I searched and sketched different images of the monkey (Figure 11). These sketchbooks can be considered as a kind of visual self-learning about the action and characteristics of the monkey. Then, in the second stage, I kept these characteristics and expanded new



Figure 11: A sketch of monkeys in reality.

visual images of the monkey in combination with other elements (Figure 12). All of these added elements aimed to capture the character of the Monkey King in the story and came from my sense of his key characteristics, such as being wild and brave, so I combined the monkey with tribal figures (Figure 13). Since the Monkey King is rebellious, I added elements related to heavy metal music (Figure 14). In this stage, sketchbooks aimed to expand the image of the monkey but they also expanded themes of the story because the main character not only stands for itself, but also represents a kind of spirit. Therefore, the final image of the Monkey King might be combined with

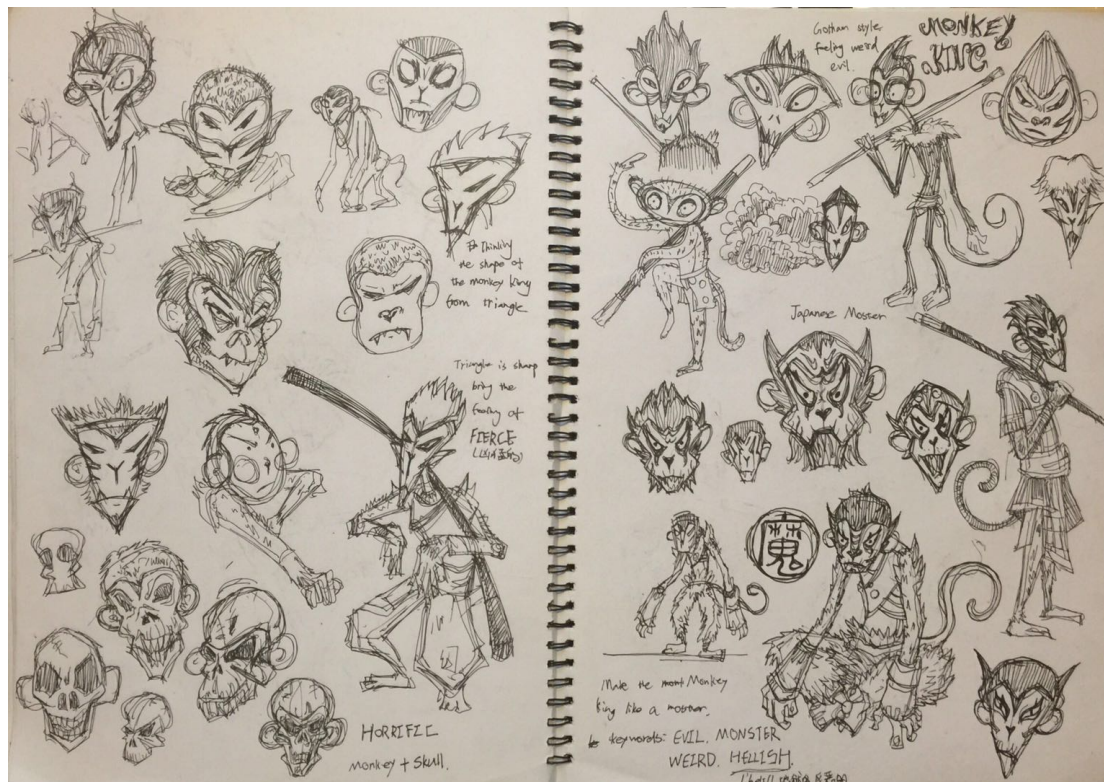


Figure 12: Expanding different images of the monkey.



Figure 13 & Figure 14: The monkey with wild elements (left) and the monkey with rock music elements (right).

multiple elements rather than only one element. Other characters' design and setting design were created in the third stage. This process was similar to the process in stage two but had different characters and buildings or environments. When I designed and sketched these, I would think out a theme or symbol first. For example, the theme of the Lady Queen Mother was designed as a phoenix (Figure 15), because in ancient China, the emperor stood for dragon and the queen was symbolised by a phoenix. When designing the Green Jade Palace of the Dragon King, it referred to a lot of ocean elements, such as spray, water, algae and coral (Figure 16). When designing the characters, illustrations of the same characters drawn by other illustrators were also collected as references. Reflective thinking was required to compare my own works

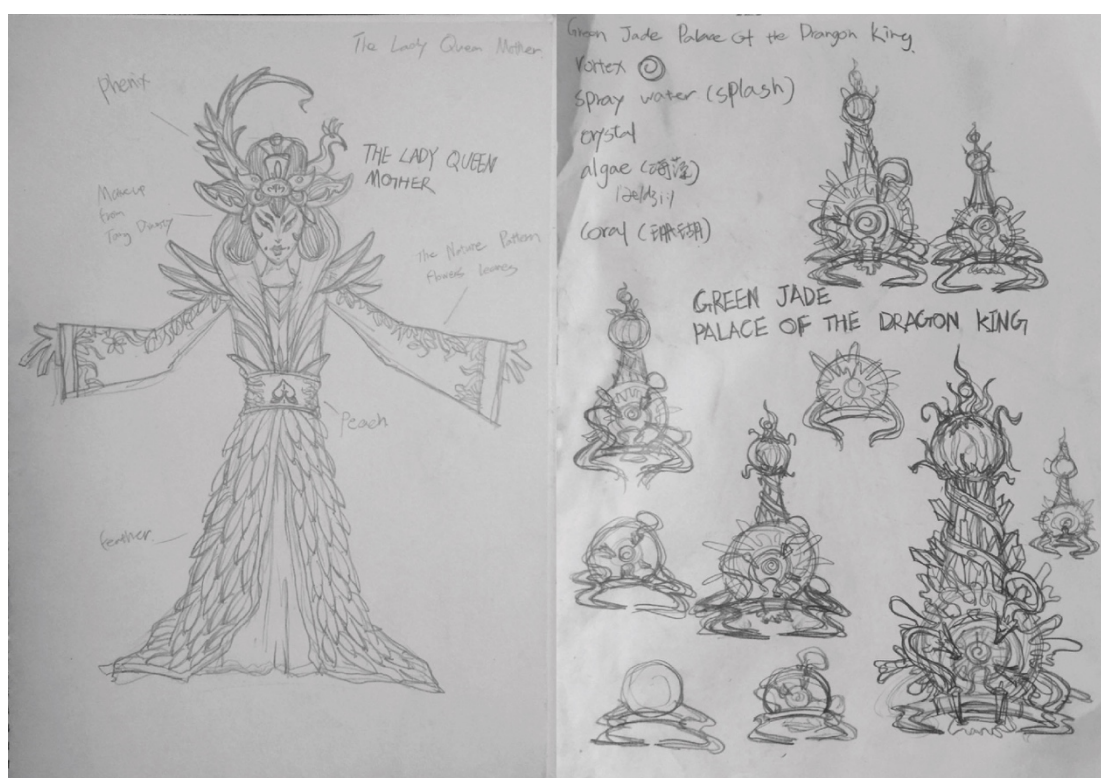


Figure 15 & Figure 16: The sketch of the Lady Queen Mother (left) and the sketch of the Green Jade Palace of the Dragon King (right).

with others (Figure 17). The sketchbook in the third stage was the most important part in my sketching process. Although I have not presented all my created characters and environments in the digital book (Figure 18), these sketchbooks built a unique world in my mind, which helped me to realise the text better and showed my own understanding through the visual aspect. It was a crucial guide to my future works. The final stage of my sketchbooks was setting characters and environments in a specific scene which was

picked from the description of the text (Figure 19). As some scenes needed to be made as short animations, I sketched frames of the animation using Animatic⁶ (Figure 20).



Figure 17: This is my sketch for the character Yama (right). Compared with other illustrations works (left), most illustrations about Yama still follow the traditional image of Yama, referring to the ancient Chinese judges for stressing authority and strictness, because Yama decides humans' life and death. We can see the Yama in other works (left) which are all in the clothes of ancient Chinese. But the image of Yama in my sketch was designed from another aspect, hellfire; hence the symbol and pattern of fire can be seen on the character. This different interpretation led to a different design.
<http://huaban.com/search/?q=yama+illustration>

⁶ **Animatic** is a simple and fun hand drawn animation app for ios and Android.



Figure 18: A part of the sketchbooks, and some characters that have not been presented in the picture book.



Figure 19: The sketch of the scene that the Monkey King's master, the Patriarch Subodhi, the first time appeared as the text described.



Figure 20: The frame of a short animation drawn by Animatic.

Drawing – Procreate⁷, Photoshop

The next step was mainly led by my previous experience and skills on drawing illustration. I drew the selected scenes using two pieces of software: Procreate and Photoshop. Because the drawn illustration would be animated, the moving part needed to be divided into different layers, and every animated part was set on a separate layer so that it could be added to the animated effect during the next process and they did not influence each other. For this part, the complicated point was that the outline of the final animated illustration needed to be hypothesised for deciding the layer of the illustration, and the more animated parts that needed to be presented, the more layers needed to be added. For example, in the scene of “meeting the master”, the image of the character of Patriarch, who is the Monkey King’s master, was designed with a mass of white beard, and I wanted every group of his beard to move, just like an octopus and thus I created as many layers as beard groups (Figure 21).

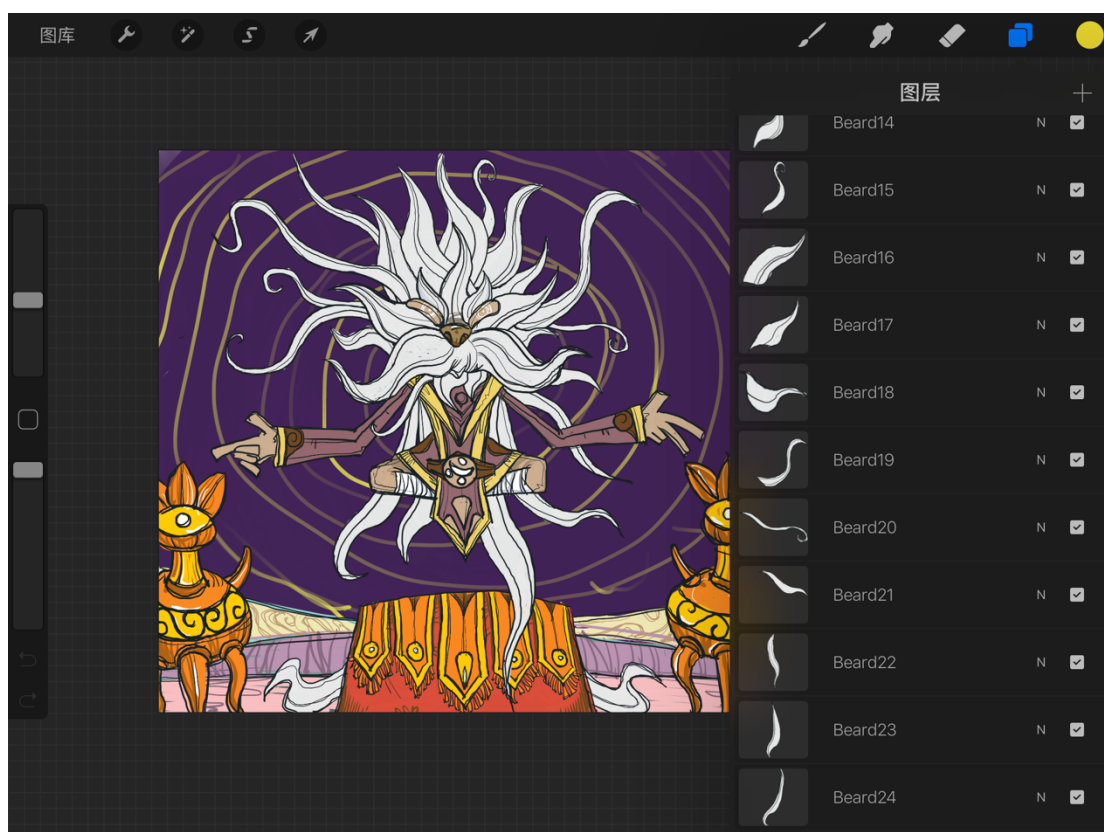


Figure 21: The illustration drawn by Procreate. More than 40 layers had been built to separate beard groups.

⁷ **Procreate** is a digital illustration app available for iPad.

Although this process is a tedious work, it produces better visual animated effects. In addition, when drawing a short animation as a dramatic animated illustration, this mode of drawing is not suitable. Layers do not need to be built, but instead, each frame of animation needs to be drawn according to the sketch made before (Figure 22), just like an animator.



Figure 22: The illustration drawn by Procreate. I drew the frame of animation one by one.

Animating and Composing – After Effects, Adobe Illustrator

Since the animation and composition would be the most creative part in my project, I made a lot of tests in this process. This process best reflects how the making, thinking and learning work together. After finishing the illustration and frames of the animation, I chose After Effect as my animating tool (Figure 23). The animated part had already been considered in the drawing process. Besides, which parts that needed to be animated were decided by description of the text and the elements in the illustration. For example, the text said that several strong lights shot to the heaven, so the illustration for this part needed a “shining lights effect”. A river was presented in a scene of the illustration, so the “flowing water effect” was needed. However, when I animated the

illustration in this process, I found that the atmosphere of the illustration was distinct enough only by animating the part described in the text and presented in illustration. Therefore, I tried to develop some animated effect for building the atmosphere. For example, the “smoke effect” was used to create a psychedelic and weird atmosphere when Monkey King’s master first debuted, though the smoke element had not been mentioned in both texts and earlier illustration. Learning from this experience, I began to pay attention to using the animated effect for building atmosphere in the following work.

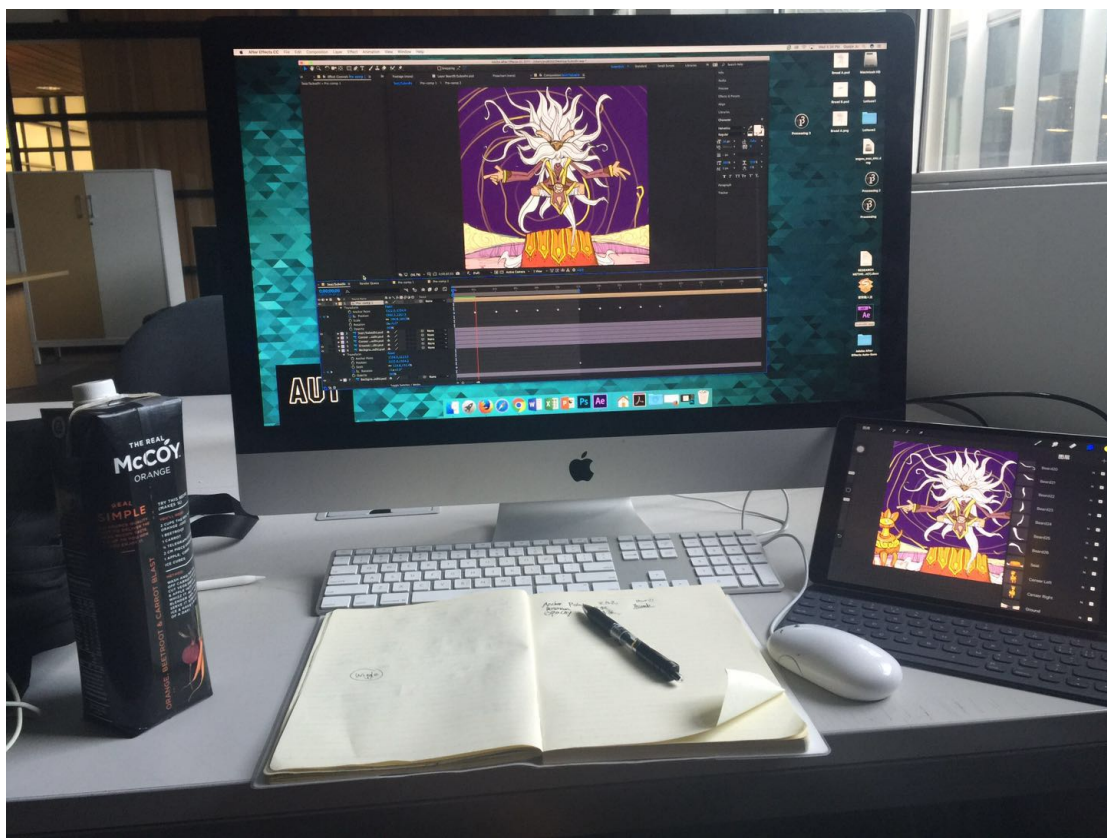


Figure 23: The animated illustration made by After Effect.

As part of the process, I composed the typesetting of the text using Adobe Illustrator. Instead of targeting at typographic novelty, my research project aims to show how my approach to illustration would work with a standard typographic treatment. At the beginning of my practice, I focused too much on the expression of illustrations and ignored the typography. As Figure 24 shows, it was hard to read the text, so I fixed the typesetting twice (Figure 25), just for comfortable reading in the digital book.

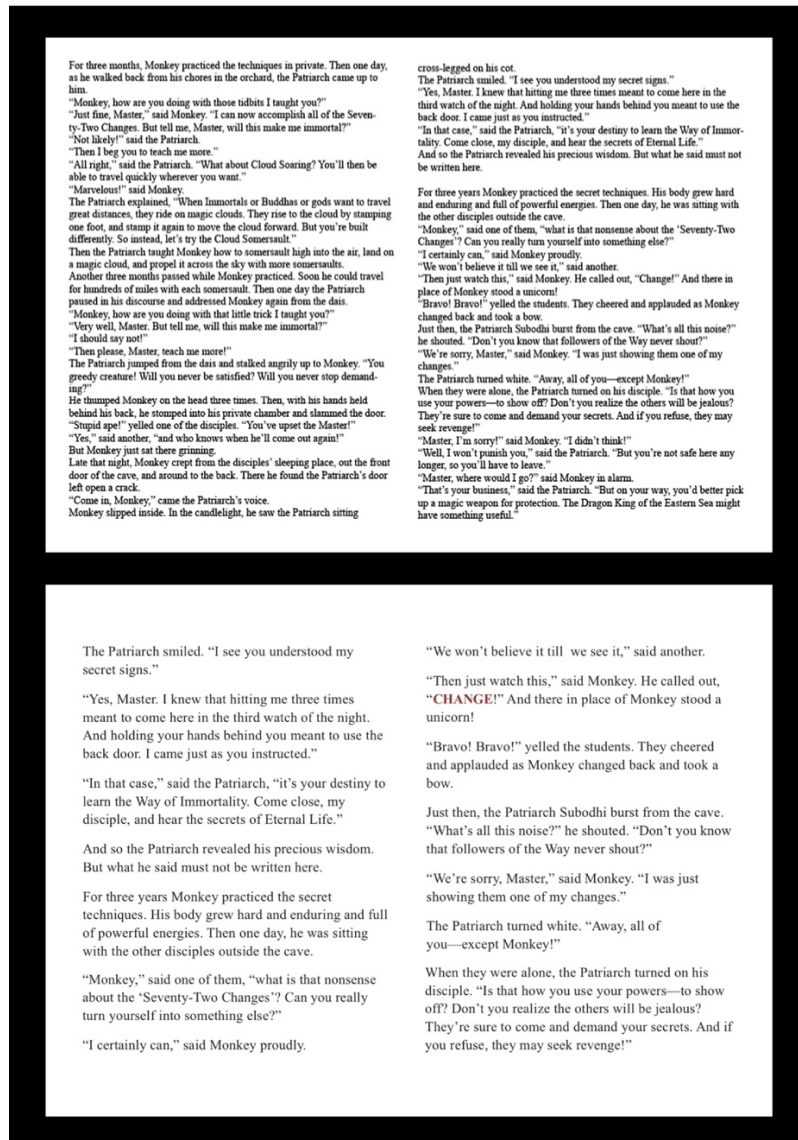


Figure 24 & Figure 25: The first typography was hard to read (upper), so the gap between lines and words was fixed for comfortable reading (lower).

The most important aim during this step was to explore how to present animated illustrations on a digital book's page and how to compose images and texts. Here I picked up a scene from the story, which was the first time the Monkey King saw his master, the Patriarch Subodhi, as the example to demonstrate my testing process. In the first test (Figure 26), I made the illustration on the page as large as possible. The illustration fills the bottom of the page, indicating that readers would focus on the illustration, which has a strong visual impact. In test 2 (Figure 27), I shrunk the illustration and saved a space for an annotation to help readers match the illustration with the text to avoid confusion about the content of the illustration. Test 3 (Figure 28) and test 4 (Figure 29), were where I attempted to make my digital book more different

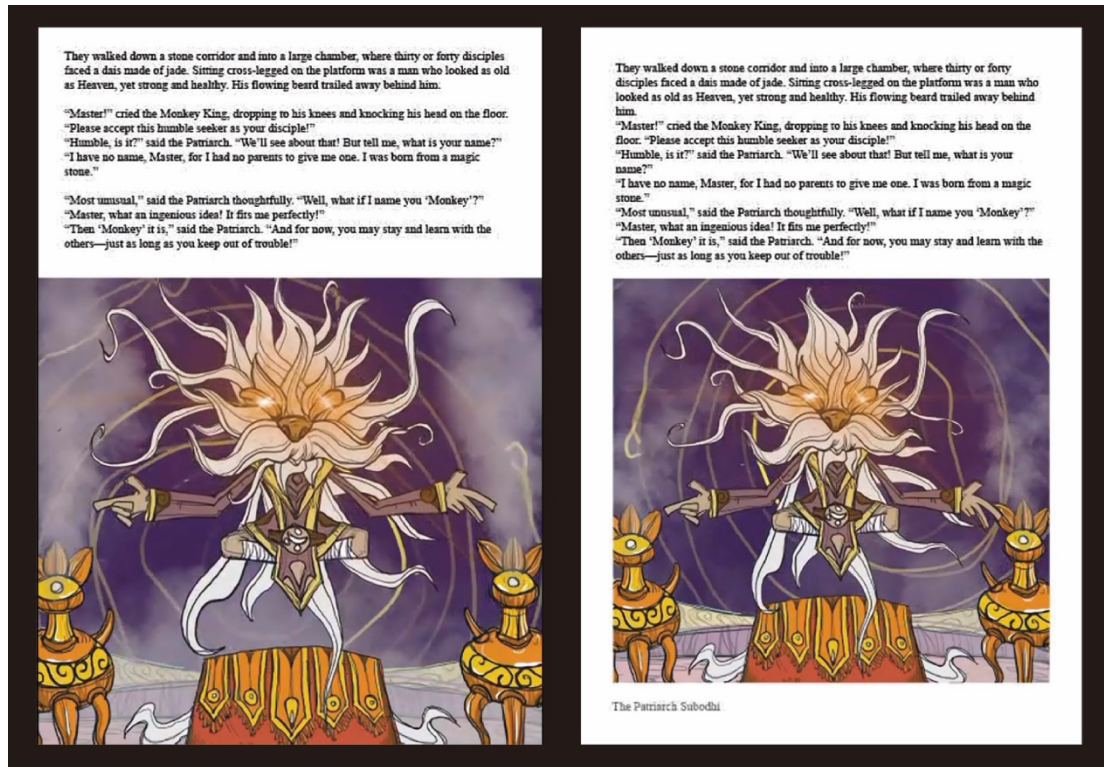


Figure 26 & Figure 27: Test 1 (left) and test 2 (right).

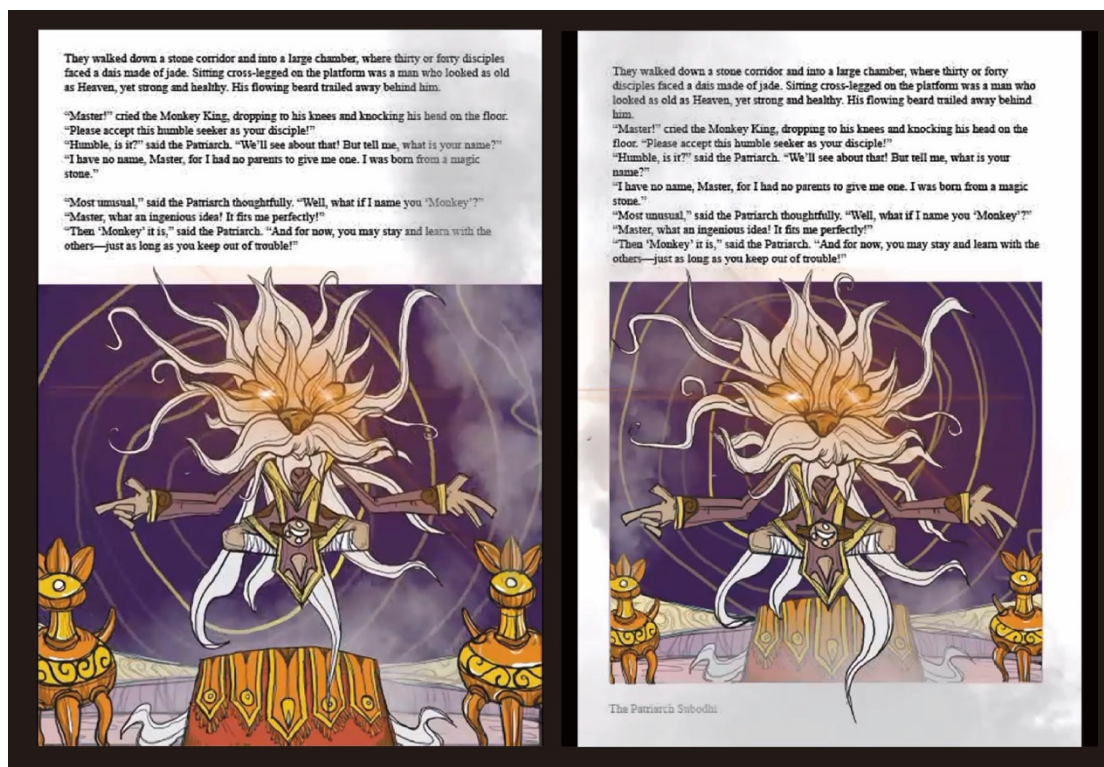


Figure 28 & Figure 29: Test 3 (left) and test 4 (right).

and interesting by breaking the limitation of the illustration's frame. Here I made a little part of the hair and beard extend out of the frame. Besides, the smoke and fog were also not limited by the frame and they even crossed the text. This indicated there was no absolute boundary between the illustration, frame and text. In test 5 (Figure 30), I attempted to remove the background and the frame, and put the character among the text, but the illustration is too small and the space between the image and the text was empty, lacking a sense of beauty. In test 6 (Figure 31), I expanded test 5. I made the illustration bigger to fill the blank between the illustration and words. However, sometimes, parts of the illustration disrupted the text, and the character appears to jump out of the texts. After comparing advantages and disadvantages of each test, I thought

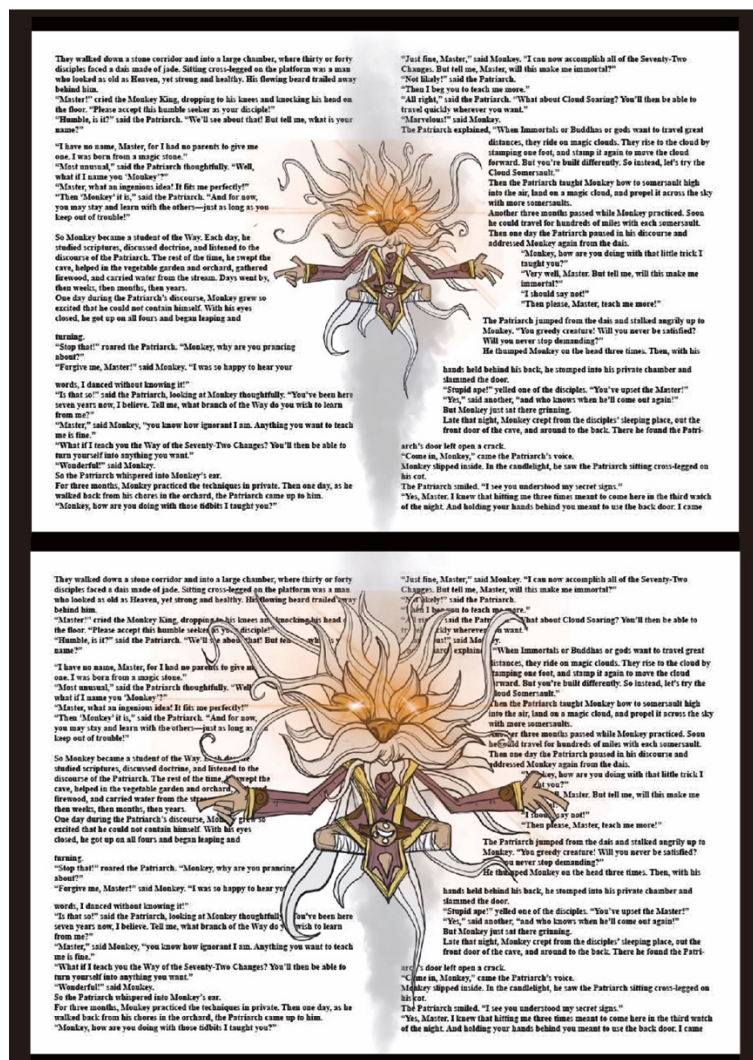


Figure 30 & Figure 31: Test 5 (upper) and test 6 (lower).

that the visual sense of test 4 was more balanced and suitable. Therefore, I modified test 4 as my final version. I cancelled the caption under the illustration because it took up extra space and felt a little complicated and, additionally, I thickened the text or word related to the illustration in the page (Figure 32).

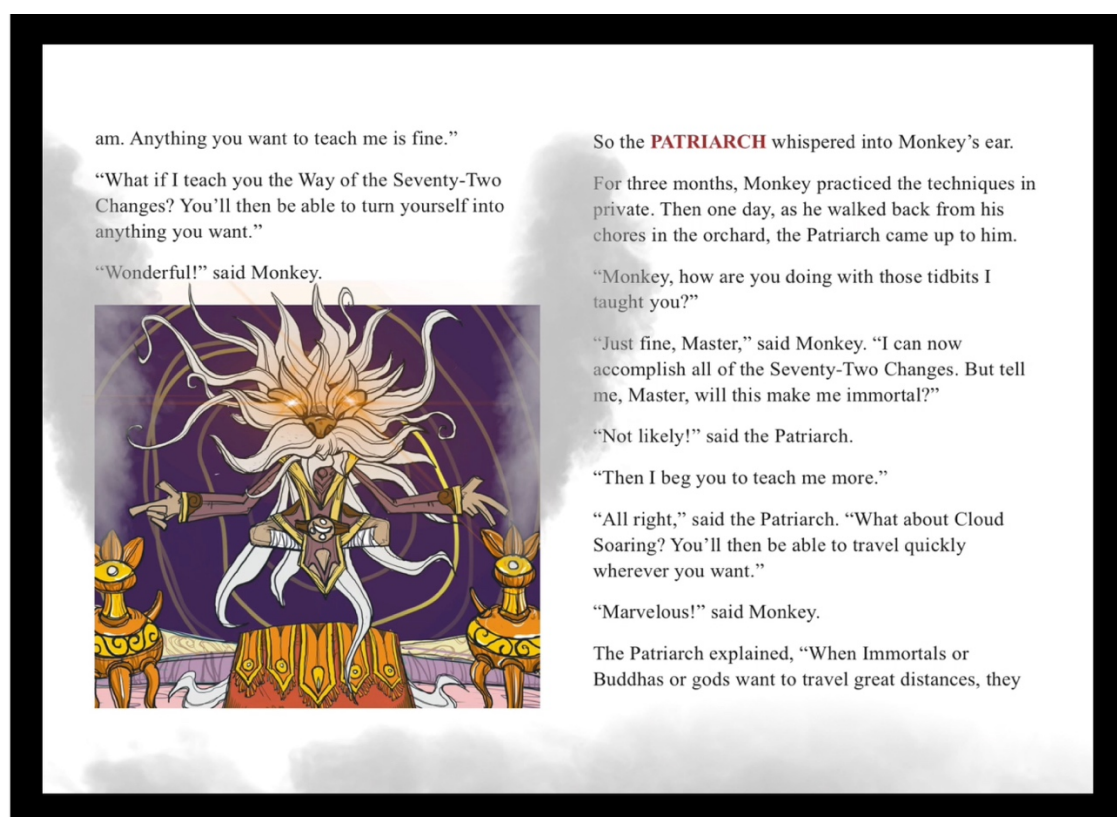


Figure 32: The final version modified from test4.

The previous experiments developed an approach based on traditional text image relationships, but elsewhere I tried to push further towards cinematic effects. Therefore, I created a short animation of “the Monkey King changed to a monster”. I used successive shadows to highlight the action of “transformation” (Figure 33) but it was not successful, because it looked too messy and not only did not highlight the action, but also interfered with the reader’s view of the animation.



Figure 33: The action of the Monkey King changing to a monster with successive shadow.

Vocalising – Garageband⁸, After Effects, Recorder

Sound effects can attract readers and lead their emotions. In the contextual review section, a motion comic *The Iron* was mentioned. From reading this comic, I felt drawn into a horror story by the scary soundscape. Therefore, I collected discrete sound effects and regrouped them as soundscapes for my animated illustration. The sound can be divided into two types: actual sounds and virtual sounds. Actual sound effects, such as the burning fire, ocean, and creek, can be collected from reality by the recorder. In this project, I used the recorder software in iPhone, and the quality of the recorded sound is good enough for this practice (Figure 34). Some of the actual sounds were hard to record, like the sound under the ocean, yet it can be searched and downloaded from the internet⁹, as well as the virtual sounds, such as the sound of dragons and monsters. In addition, I also found and picked the background music for some scenes to lead the atmosphere. When I gathered these sound elements, I edited and combined them using Garageband and After Effects. Besides, the soundscape could be built for each illustrated scene.

⁸ **GarageBand** is a software used for creating music or editing audio elements for macOS and iOS.

⁹ Websites of sound resources: <http://sc.chinaz.com/yinxiao/>, <http://www.aigei.com/sound/>.



Figure 34: Recording the sound of burning fire by the software in iPhone.

Fixing and Presenting – After Effects, iBook Author¹⁰

When I reviewed and checked my work, I fixed some animated illustrations and the composition, layout and balance of the digital page. For example, in the Horse Face and Ox Head pages, due to too much blank space around the illustration, the image of Horse Face and Ox Head looked too separated from the text and seemed incongruous. Therefore, I made two backgrounds under the illustration to balance the visual expression in the page (Figure 35). Finally, I chose iBook as the platform to present my digital picture-book by iBook Author. However, iBook Author does not support files with alpha channel (png), indicating the flexible interaction between illustrations and texts could not be shown well. What I could do was to export animated illustrations and texts together as videos, with one short video matched to one page, and then displayed by iBook Author. Anyway, although I could not make a real digital picture-book, this way of visual presentation allowed me to show the concept of my design in its current stage.

Summary

As shown in this section, the practice was developed through the process of making, thinking and learning, as presented in Figure10. It began with intuitive sketching and new ideas gradually emerged during later tests. The reflective thinking during the whole process modified deficiencies and completed the practice in the current stage. When I made the practice, I did not ask myself “what do I want to do?” but “what can I do?” and “what can I learn?”. This allowed me to balance “practice-led” research, and “experience-based” practice led by heuristic inquiry.

¹⁰ **iBooks Author** (iBA) is an e-book authoring application by Apple Inc.

4. Death's Domain

On the surface of the Eastern Sea, not far from the Dragon King's palace, Monkey landed lightly on a barren rock that jutted above the waves. Stretching himself out on it, he yawned and then studied the sky.

"Now that I'm an Immortal, I think I'll fly up to Heaven and become a god as well. But that's all

after a good nap."

He closed his eyes and quickly drifted into sleep.

All at once Monkey felt himself jerked to his feet.



Two men were clutching his elbows. One man had the face of a horse, the other had the head of an ox.

Horse Face held an official document, which he studied closely. "Is your name Monkey?"

"That's right," said Monkey, in a daze.

"All right," said Ox Head, "get moving!"

They started to drag him off. Stumbling once, Monkey happened to glance back. There he saw himself, still lying on the ground!

They rounded the rock and started across a desolate plain. The sea was nowhere in sight. "Where is this?" he asked. "And how did I



CHAPTER 4 DEATH'S DOMAIN

On the surface of the Eastern Sea, not far from the Dragon King's palace, Monkey landed lightly on a barren rock that jutted above the waves. Stretching himself out on it, he yawned and then studied the sky.

"Now that I'm an Immortal, I think I'll fly up to Heaven and become a god as well. But that's all after a good nap."

He closed his eyes and quickly drifted into sleep. All at once Monkey felt himself jerked to his feet.



Two men were clutching his elbows. One man had the face of a horse, the other had the head of an ox.

HORSE FACE held an official document, which he

studied closely. "Is your name Monkey?"

"That's right," said Monkey, in a daze.

"All right," said **OX HEAD**, "get moving!"

They started to drag him off. Stumbling once, Monkey happened to glance back. There he saw himself, still lying on the ground!

They rounded the rock and started across a desolate plain. The sea was nowhere in sight. "Where is this?" he asked. "And how did I get here?"

"He wants to know how he got here!" snorted Horse Face.

"You got here the same way as everyone!" said Ox Head.

After a while they came to the wall of a city. Above the gate was an iron placard with characters inlaid in gold.



Figure 35: The lower page has added a background for the illustration.

Findings and Results

Animated Illustration

Most animated illustration used in my digital picture-book is understated. The dramatic animated highlight can only be used in a few places, because I found that as a book illustration, short animations are not as impressive as understated animated illustrations. Therefore, the understated animated illustration aims to have some of the characteristics of moving pictures, which impresses readers, but avoids their missing information because of the fast and strong movement. Additionally, the understated animated illustration can lead attention to significant information by intensifying the partial animated effects. For example, when the text describes how the Monkey king was subdued by Kwan Yin's vase, the animated illustration highlights the vase with a stronger animated effect, a series of changing halos (Figure 36). Here the ancient Chinese word "Celestial Staff of the Obedient Iron" has been emphasised by a shining effect in another illustration (Figure 37). Dramatic animation can highlight a specific scene through lengthening the time of the stop-movement in the animation, such as when an animation frame of the image of the Monkey King had been lengthened to impress people with the character of the Monkey King (Figure 38). Capturing the key point and balancing animated effects in digital picture-books is significantly important. In brief, animated illustration is used in a digital book for making it as a "book plus" rather than an "animation minus".

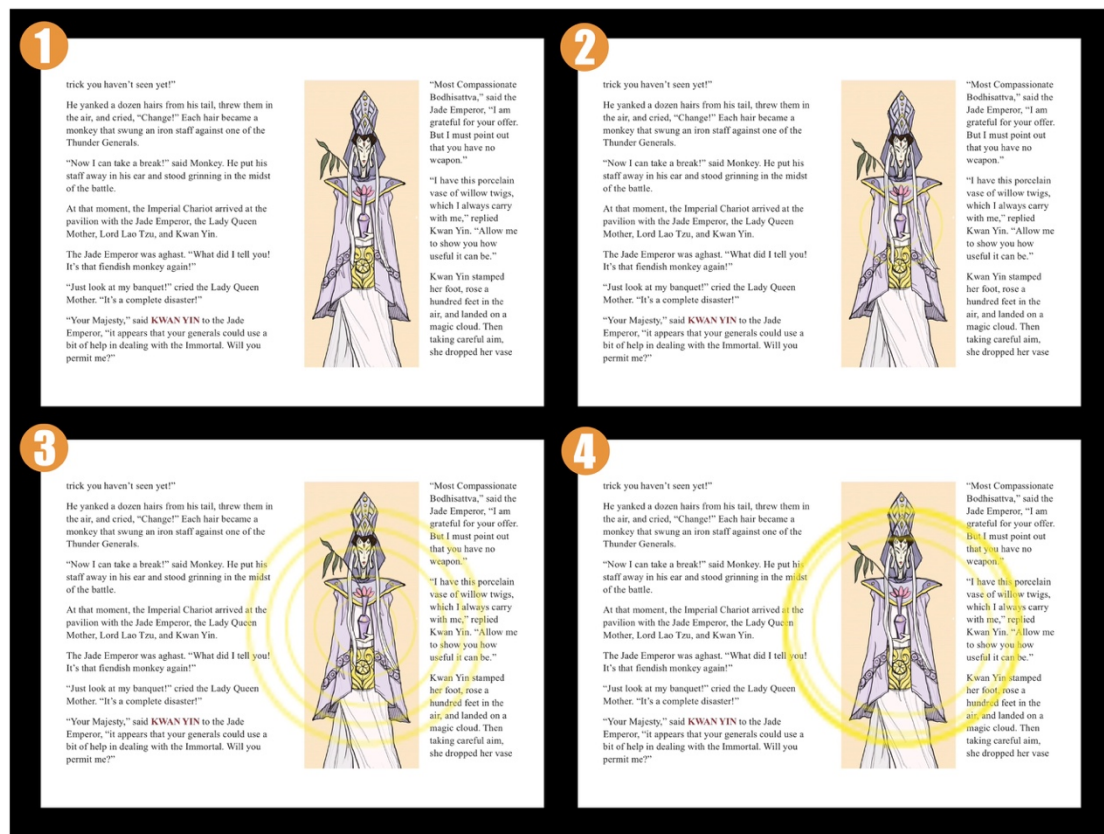


Figure 36: In some figures, I will show the animation process with a series of sequence pictures and order them with numbers at the top-left corner. The vase was highlighted by the animated effect of halos.



Figure 37: The Chinese ancient word was emphasised by a shining effect.

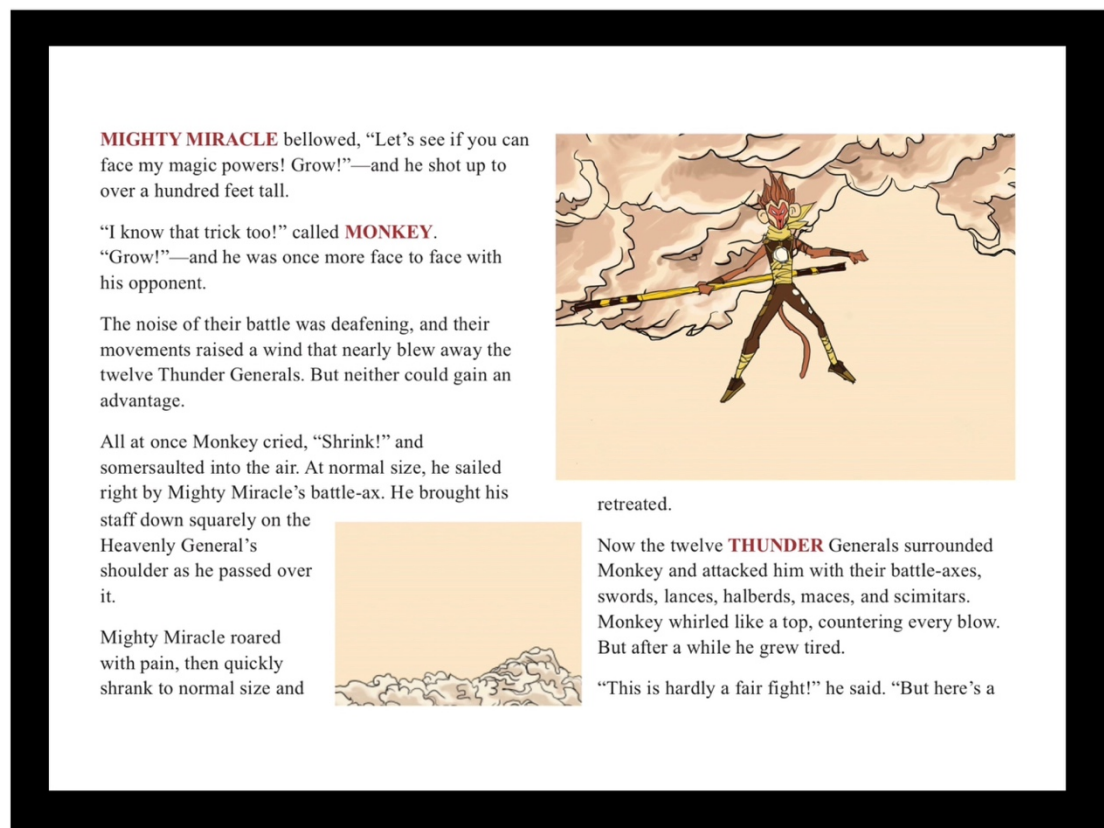


Figure 38: A animation frame of an image of the Monkey King has been lengthened.

As mentioned above, two advantages claimed by Smeets and Bus are enhancing comprehension of text and better visual effects (2013). This research practice has developed animated illustration from these two aspects. The function of book illustrations is explaining the text. And compared with physical books, animated illustration in digital books can not only show a process of action, such as the transformation of the Monkey King (Figure 33), but also explain some underlying implications of the text. Figure 39 presents the process of how the animated illustration explains the relationship between the "Diving Cave of the Three Stars" and the "Mountain of Heart and Mind", where the Monkey King learned the skill. These kinds of animated explanations are interesting and beneficial in terms of reading experience. Moreover, I have also tried to combine dramatic and understated animated illustration in one page to enrich the visual effect. In Figure 40, I designed how the Dragon King swam across the screen with dramatic action. By contrast, the more fixed images of the Captain and the Green Jade Palace of the Dragon King are understated, so viewers can distinguish what is primary and secondary in a complicated illustration, and different senses of visual hierarchy may enhance the artistic expression.

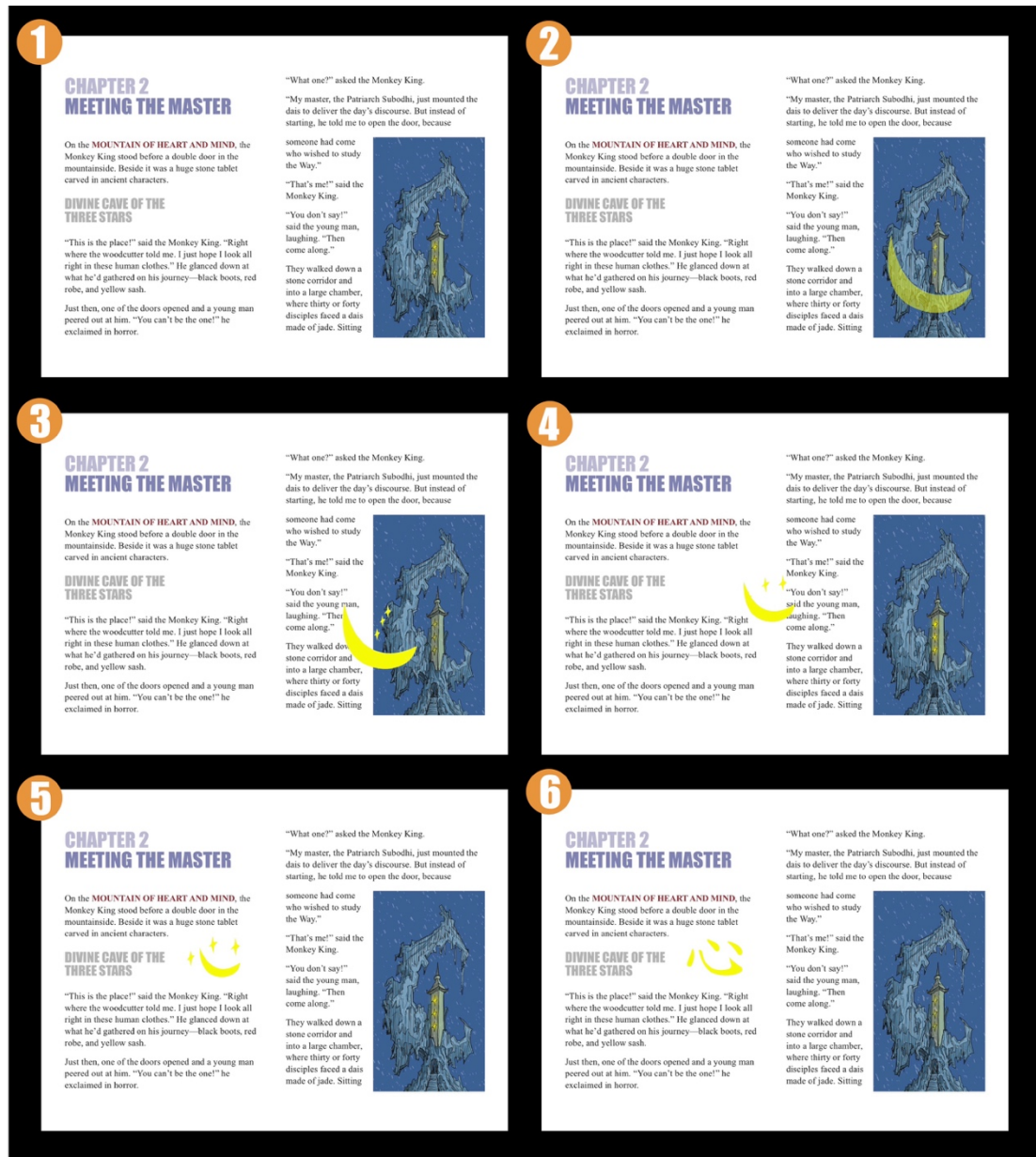


Figure 39: The shape of "Diving Cave of the Three Star" was formed by a moon and three stars, which is similar with the Chinese word "heart". The animation shows how the shape of the moon and stars transfers to the Chinese word. Therefore, the Monkey King found "Diving Cave of the Three Star" on the "Mountain of Heart and Mind". Actually, it is also the way that the Monkey King looked for himself.

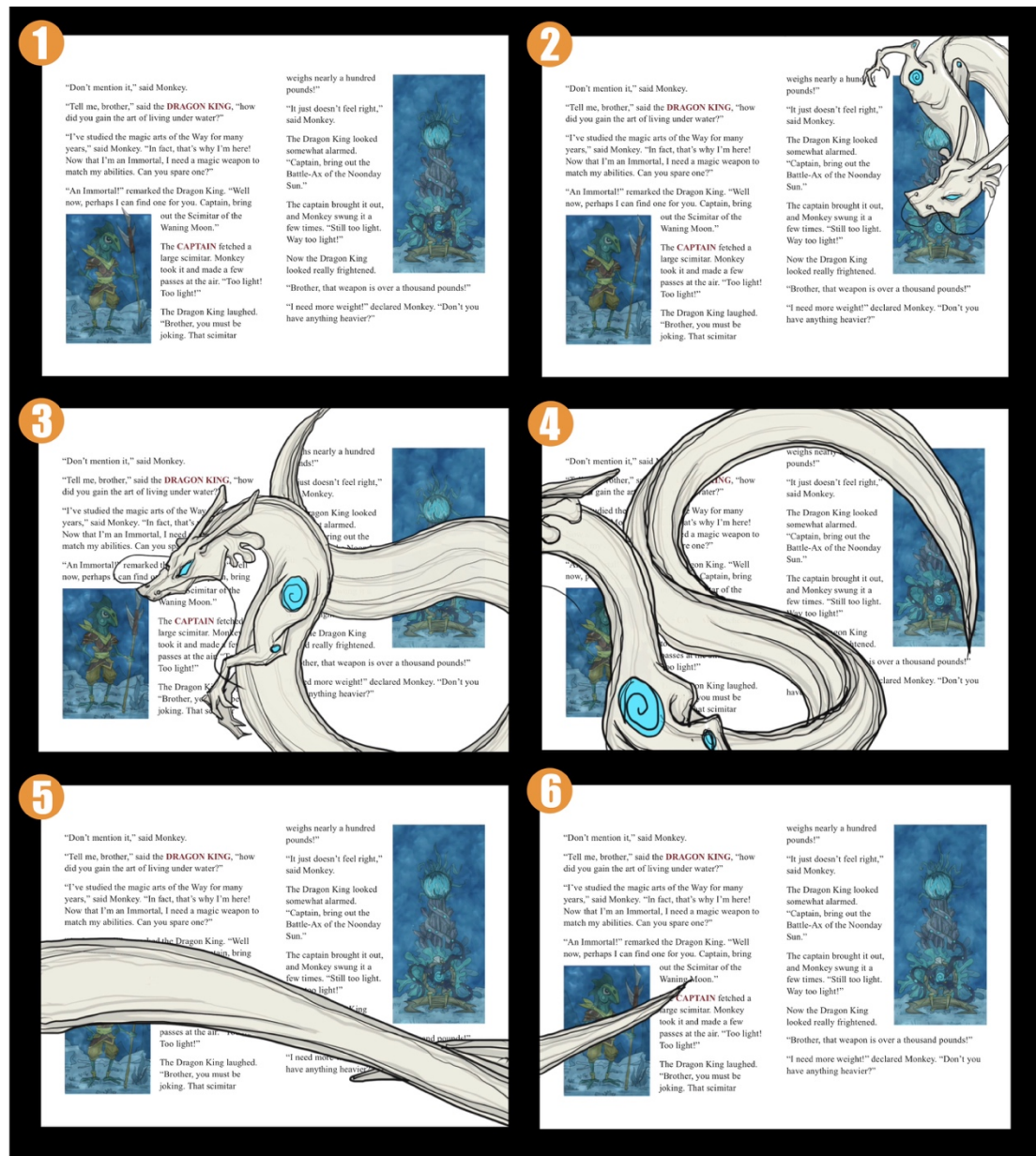


Figure 40: The Dragon King swam across the screen with dramatic action.

Layout

As mentioned earlier, the two examples of *Harry Potter* in Kindle (Figure 5) and iBook (Figure 6) contrasted the issue of choosing a single page in one screen or double pages in one screen. I considered that *Harry Potter* presented in iBook is better than that in Kindle, because the composition in two pages combines the texts and illustrations properly but the illustration is separated from the text in a single page display. When the digital picture-book is shown as a double-page spread, the effect is more natural, resembling an open paper book, which is close to the human reading habit (Bederson, Quinn & Druin, 2009). Besides, a two-page display provides more flexible spaces for animated illustration moving in creative ways. With the illustration of the Monkey King

fighting with immortals as an example (Figure 41), the space allows the Monkey King to jump from one frame to another frame and displays a dramatic animation for viewers.

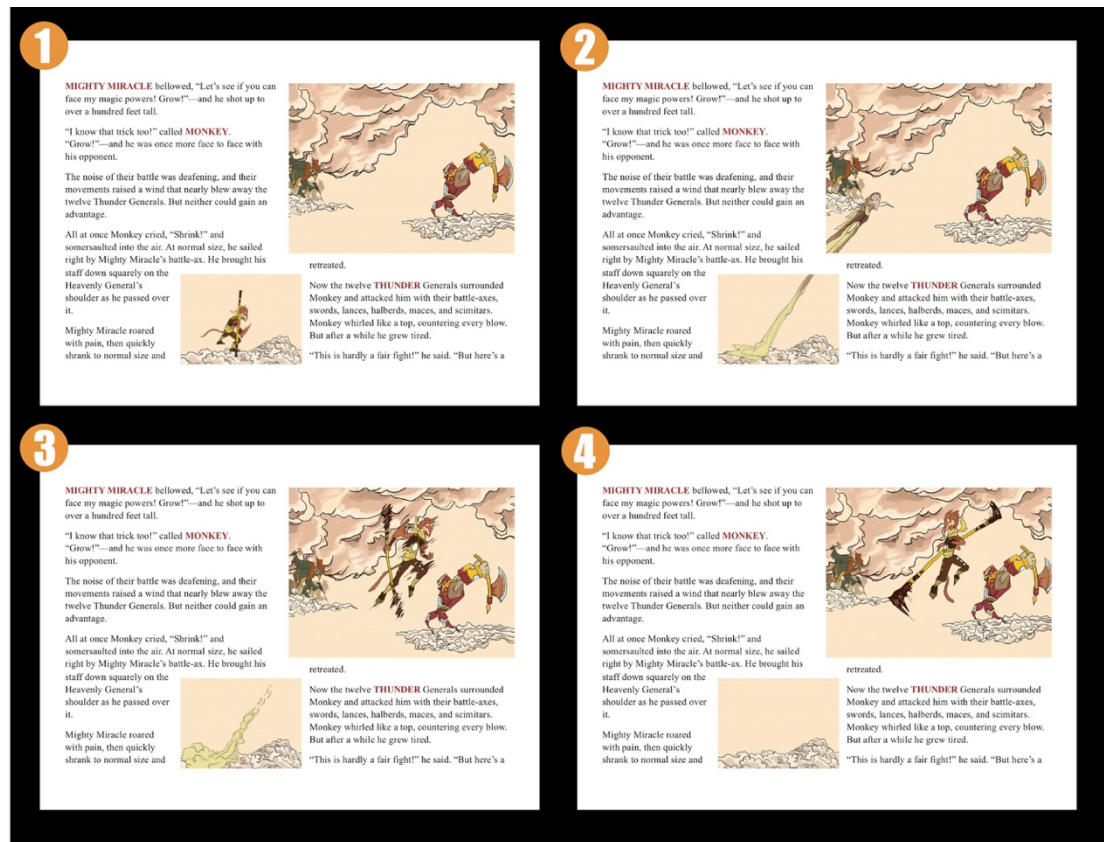


Figure 41: The Monkey King jumped from one frame to another frame.

The layout of the digital picture-book is not only about the issue of single page or two-page display, but more importantly, is related to the relationship between illustrations, frames and texts. In my animated illustration practices, the illustration is not limited by frames, and these unrestricted animated illustrations can express the content relevantly and build a better atmosphere. For instance, Figure 42 describes when several intense golden lights shot from Monkey King's eyes and reached to the farthest reaches of heaven. If the light was limited by the frame, it would not match the text's word "farthest", and the visual effect would be normal and weak. Figure 43 presents the illustration at the beginning of the book, which uses a floating cloud passing to build a peaceful environment through the frame and text. I have tried to create the interaction between illustrations and texts in Figure 44 and Figure 45. I added an animated effect in Figure 44 for catching viewers' attention on animated illustration, when the Monkey King ran across the page and these words are separated and leave a blank path. In Figure

45, I wanted to create the atmosphere of an earthquake, so the text is shaken with the illustration. However, it is important to point out that in order not to disrupt the reader's reading, these kinds of animated effects can only be set for a short period or be triggered by a specific action (such as shaking the device or touching the screen).

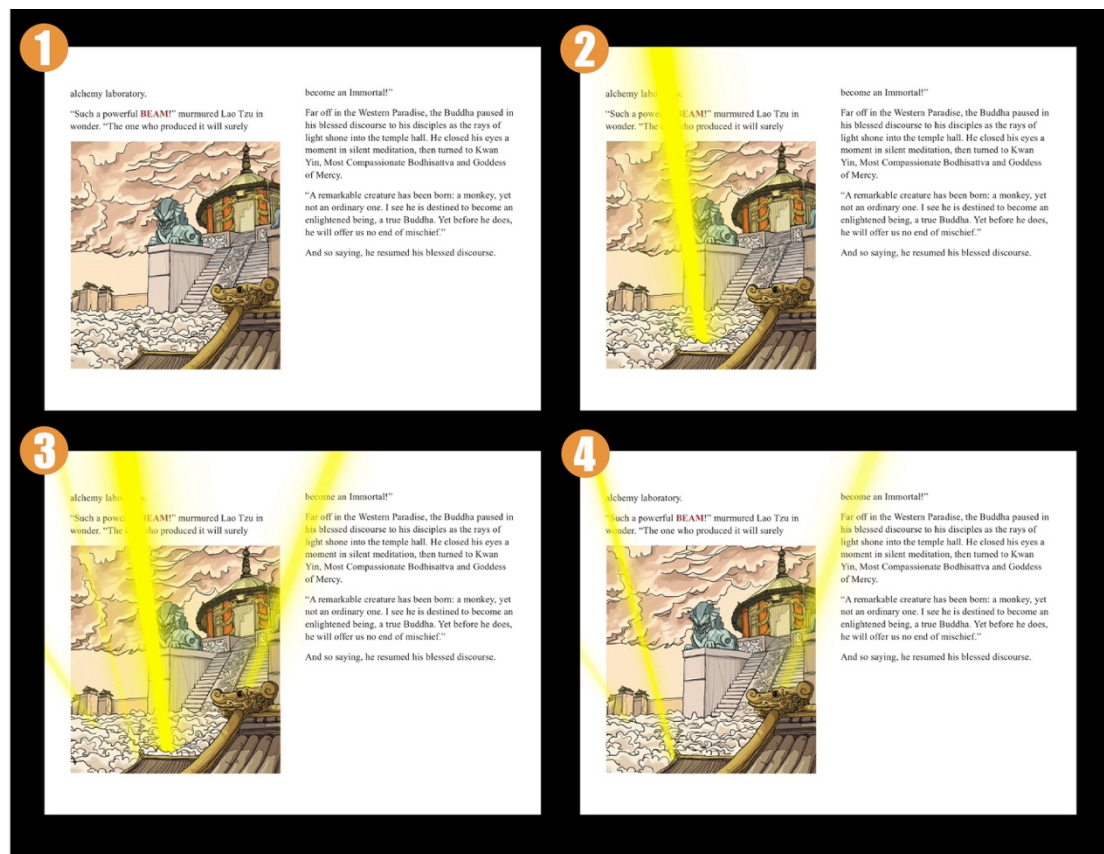


Figure 42: Several golden lights twinkled and shot across the frame.



Figure 43: A floating cloud and peaceful landscape. A cloud floated across the page.

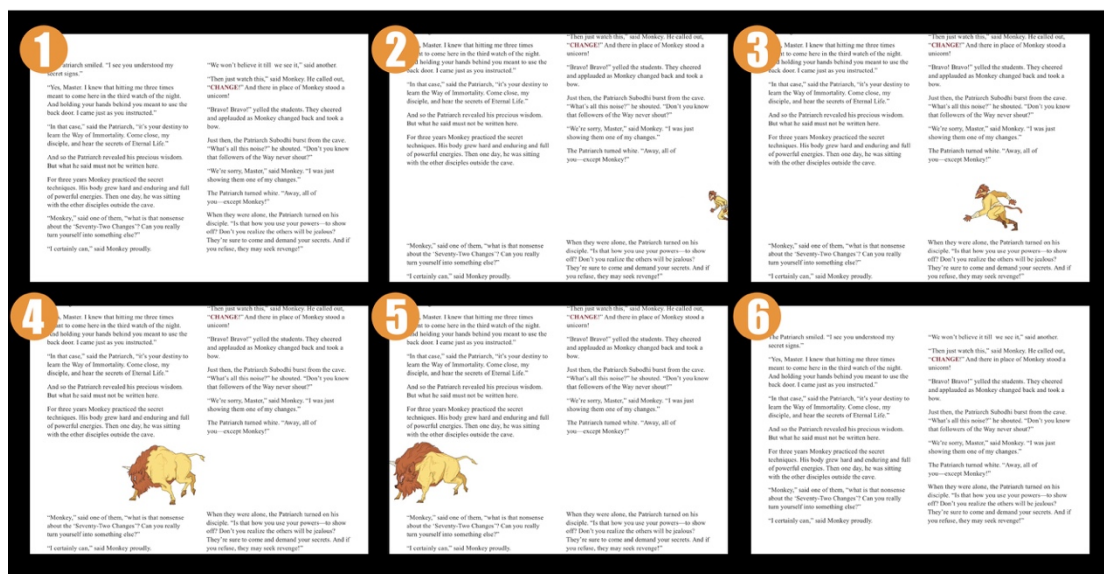


Figure 44: The Monkey King ran across the page as well as the text separated.

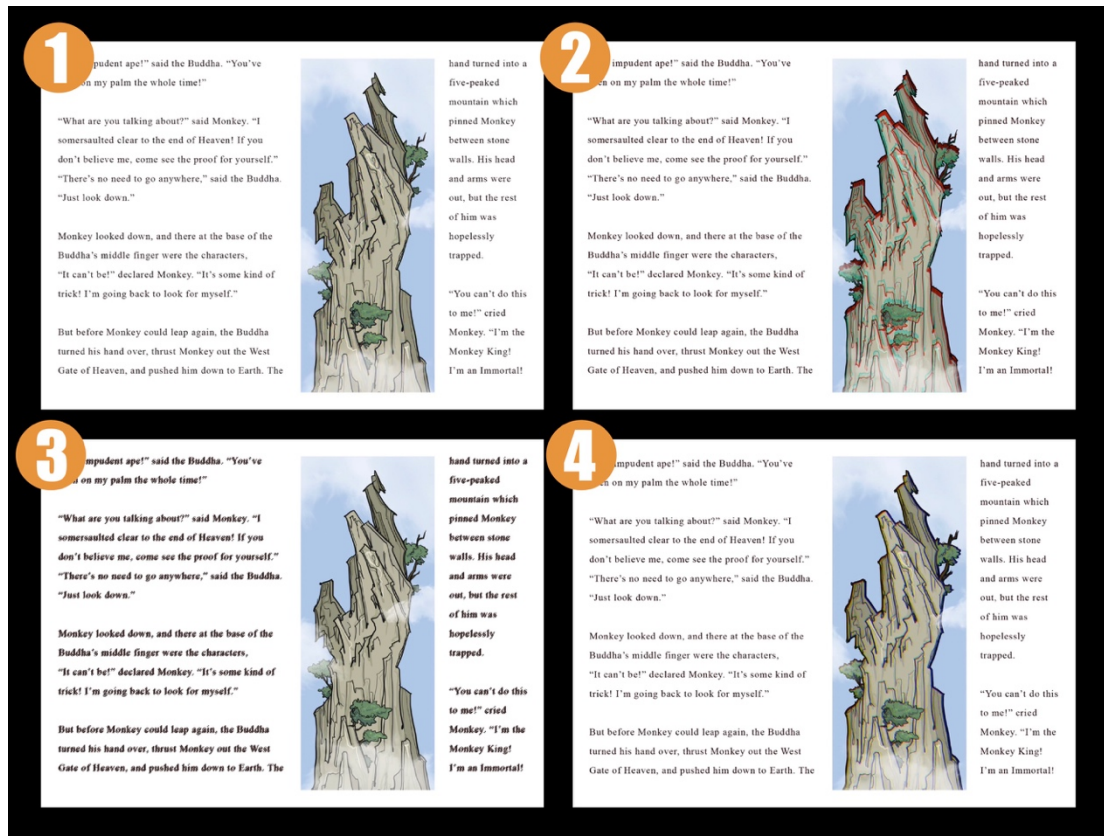


Figure 45: The shaking of the illustration and words.

Material

Materials can easily be expressed in physical books. With the development of digital technology, although the digital qualities of a digital book (e.g., interactivity, functionality, performance) are rapidly enhancing, the physical qualities (e.g., sensorial feeling, bodily engagement) are progressively disappearing (Jung & Stolterman, 2012). Although it is challenging to create materials that can be touched in digital books, it can make audiences visually distinguish different materials through the digital screen. Like the movie *The Little Prince*¹¹, which used paper-cut to show some animation segments, audiences can distinguish the hard paper and soft paper from the visual view (Figure 46).

¹¹ *The Little Prince* is a 3D animated film directed by Mark Osborne and adapted from the 1943 children's literature of the same name.

IMAGE REMOVED FOR COPYRIGHT REASONS

Figure 46: Three scenes I picked from the movie *The Little Prince* shows the different materials. The upper scene is hard paper material, the middle scene is soft paper material, and the lower scene is common 3D animation material.

http://cdn.unwire.hk/wp-content/uploads/2014/12/2014-12-11_105516.png

http://img.inmywordz.com/uploads/20170322135005_28.jpg

<https://cdn2.ettoday.net/images/1050/d1050362.jpg>

In my digital picture-book, I added different material elements to enrich the illustration, such as water, smoke and fire (Figure 47). Some of these elements were collected from reality combined with 2D illustration, which provided contrast. This kind of expression

referred to collage, which is a distinctive part of modern art (Greenberg, 1982). The animated illustration in my digital picture-book used the same approach to create a space between the virtual and the actual, and to satisfy the audience's visual enjoyment. Briefly, adding the elements of collage art makes the digital book more artistic.



Figure 47: The fire and smoke elements were collected from reality and used in animated illustration.

Sound

In this practice, actual sounds and virtual sounds were collected and used for creating soundscapes for each animated illustration based on the description of the text. For example, when readers watch the scene about the Dragon King under the ocean, they will hear the flow of water bubbles, the sound of a marine animal's sonic wave and the bellow of the huge dragon. These sound effects make the atmosphere that the illustration wants to express more credible, and thus resonates with readers, making contributions to the immersive feeling. Furthermore, background music can also be used in digital books to support for comprehension of the story, like highlighting characters' moods (Smeets & Bus, 2013). For instance, in the scene where the Monkey King fights with immortals (Figure 41), I chose a fast beat rock music as the background

music to express Monkey King's excitement and anger, as well as to create a tense ambience. In addition, the rock music also stands for Monkey King's rebellious spirit. Although additional sound effects are not the main feature of my digital picture-book, they can assist the animated illustration to lead readers' emotions and enhance the reading experience from both visual and acoustic aspects.

Interaction

Because of the digital platform, animated interaction can be triggered easily by touching, tapping or swiping the touchscreen or tilting or shaking the device (Salen & Zimmerman, 2004). Actually, all the animated or audio effects can be made interactive with readers. However, as a designer, it is important to select suitable places to add the interactive function, for example, the interaction can be added where something needs to be more interesting and attractive or to enhance understanding to the text. In this project, due to the limitations of the technique, the real interactive trigger on animated illustration has not been linked, however, the visual presentation can show the concept or idea of the interactive design through two examples in my digital picture-book. On the page of the "Monkey King's seventy-two changes", the interactive trigger is hidden in the red bold word "change". When readers tap the red word, the Monkey King would run across the page and transfer from a monkey to a unicorn monster (Figure 44). This interaction can show the process of "change", which impresses the reader, and the animated effect requires readers to manually trigger. Therefore, it would not influence their reading of the text. I also explored and designed other special interactive methods that match the content of the text and enhance the reading experience, for instance, when the Monkey King was pressed by the five-peaked mountain, the vibrating effect caused by the earthquake was achieved by shaking the device (Figure 45).

Integrating and Improving the Reading Experience

The sections above analysed animation, layout, material, sound and interaction in digital picture-books. The challenge of this project has been how to integrate these five elements and make them adapt to a specific scene. All effects added in illustration should be selected modestly and used for building atmosphere and transmitting meaningful information. As when I created the scene for Monkey King's master, Patriarch, who is a magical and powerful man, to communicate this, I created a

psychedelic and weird atmosphere for readers (Figure 32) by emphasising the materials - using smoke, twisty hair and beard, with a ceaselessly rotating dizzy shape in the background. I emphasised the power of the Patriarch by making his eyes shine with red light and matched this with dramatic background music. Sometimes, while illustrators are integrating and arranging these elements, they are also incorporating their own ideas in the work. As I mentioned above (Figure 39), when people read the page of “Diving Cave of Three Stars”, they can know the relationship between “Diving Cave of Three Stars” and “Mountain of Heart and Mind” through an animated explanation by tapping the red bold word. Moreover, when I designed this scene, I added the animated and audio effects of a snowstorm, which were not written in the text. I wanted to convey how the Monkey King’s search for a master was hard and show that the Monkey King was confused, and the storm mirrored a turbulent and confused state. I here used my comprehension to bring more meaningful information for readers.

Mangen claimed that people read books in multiple manners, and the reading experience is perceptual, cognitive and interactive (2008). The visual animated effects and audio sound effects in digital books can satisfy the perceptual demand. Besides, the vivid animated explanation and atmosphere built for matching the text can facilitate cognition. Various interesting animated interactions can be easily triggered by different ways on a digital platform. Through composing and designing the animation, layout, materials, sound and interaction, the digital book illustration has obvious advantages in perceptual, cognitive and interactive aspects. Consequently, readers can hopefully gain a superior reading experience.

Conclusion

Practice is especially important in the current research. Combining heuristic inquiry with a “practice-led” model, linked a cooperation of making, thinking and learning during the process of the project. Reviewing the structure of the dissertation, every section matched the diagram (Figure 9) shown in the research design part. Contextual review is the preparation, while practice and procedure is the practice and finding, and result is the summary. Based on the above mentioned, “practice-led” research is also “research-led” practice. The contextual review formed the background, knowledge led the practice, and the practice led the new finding of expression of digital book illustration. The research is a process of “thinking-making-thinking.”

As a heuristic product of this practice-led research, my experiment in creative digital picture-book design, *Havoc in Heaven*, has combined multiple ideas and elements. This exegesis has explained how an enhanced form of digital book illustrations has been found through practice by combining a number of already existing approaches. It discusses the question from five aspects: animation, layout, materials, sounds and interaction. The result indicates that the breakthrough and innovation of this project is mainly reflected in three points, compared with current digital picture-books. Firstly, it enables emphasising and explaining the specific detail in texts through both dramatic animation and understated animation. Secondly, the most important contribution in my project is loosening the traditional boundaries between illustration and text. The animated illustration can break the limitations of the frame and interact with the text. The flexible composition between images, words and frames is the most distinct visual trait in my digital picture book. Finally, it reinforces the importance of the illustrator’s role in selecting and composing the available tools. However, digital illustration provides illustrators with various new material elements, sound effects and interactions which add another layer to the ability of the illustrator to enrich the reading experience,

During this research, the understanding of the digital medias and the learning of the animation software have enhanced my original illustration skills. However, when I reflect on the research, there still exist some regrets. For example, colour, as an indispensable element in illustration, has not been discussed specifically. There are

questions which could be explored, like “how can the changing colour be integrated into the animation effect?” and “how does it serve the illustration?”. In addition, due to the limitations of the technique, some designs still cannot be fully realised. The exploration of digital book illustration has a close connection with digital technology. In the future, the exploitation of new technology will bring more developmental space for digital book illustration. As mentioned in this study, the research on illustrations in digital books has a beginning but no ending. Moreover, the process and the findings in this practice will be a valuable experience for the next stage of the “practice-summary”.

Reference

- Barr, R., Zack, E., Garcia, A., & Muentener, P. (2008). Infants' Attention and Responsiveness to Television Increases with Prior Exposure and Parental Interaction. *Infancy*, 13(1), 30-56. doi: 10.1080/15250000701779378
- Bederson, B. B., Quinn, A., & Druin, A. (2009). Designing the reading experience for scanned multi-lingual picture books on mobile phones. In *Proceedings of the 9th ACM/IEEE-CS joint conference on Digital libraries* (pp. 305-308). ACM.
- Bodmer, G. R. (1992). Approaching the illustrated text. *Teaching children's literature: issues, pedagogy, resources* (pp. 72- 79). NY: The Modern Language Association of America.
- Candy, L. (2006). Practice based research: A guide. *CCS Report, 1*, 1-19.
- Carter, D., & Diaz, J. (1999). *Elements of pop-up: the pop-up book for aspiring paper engineers*. New York, NY: Little Simon.
- Clayton, M., & Wiesenthal, H. (1991). Enhancing the sketchbook. In *Proceedings of the Association for Computer Aided Design in Architecture* (ACADIA 1991).
- Cutting, J. E. (2002). Representing motion in a static image: constraints and parallels in art, science, and popular culture. *Perception*, 31(10), 1165-1193.
- Doonan, J. (1993). *Looking at pictures in picture books*. Stroud, UK: Thimble Press.
- Frasca, G. (2001). What is ludology? A provisory definition. *Ludology.org*. Accessed April 15, 2018.
- Greenberg, C. (1982) 'Collage', in Frascina, F. and Harrison, C. (eds) *Modern Art and Modernism*, London: Paul Chapman.
- Glasson, R. (2016). *The impact of digital technologies on reading, readers and the book* (Doctoral dissertation, University of Sussex).
- Golden, J. M. (1990). The narrative symbol in childhood literature: Explorations in the construction of text. Boston, MA: Walter de Gruyter.
- Hillesund, T. (2010). Digital reading spaces: How expert readers handle books, the Web and electronic paper. *First Monday* (Online). Retrieved from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2762/2504>. Accessed April 15, 2018.

- Höffler, T. N., & Leutner, D. (2007). Instructional animation versus static pictures: A meta-analysis. *Learning and instruction*, 17(6), 722-738.
- Jenkins, H. (2004). Game design as narrative architecture. In N. Wardrip-Fruin & P. Harrigan (Eds), *First Person: New media as story, performance, game*. Cambridge, MA: MIT Press. Retrieved from <http://web.mit.edu/cms/People/henry3/games>
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York, NY: New York University Press.
- Jung, H., & Stolterman, E. (2012). Digital Form and Materiality: Propositions for A New Approach to Interaction Design Research. *Proceedings of the 7th Nordic Conference on Human-Computer Interaction- NordiCHI '12* (pp. 645-654). New York: ACM Press.
- Juul, J. (2003). The game, the player, the world: Looking for a heart of gameness. In M. Copier & J. Raessens, (Eds.), *Proceedings at the Level Up: Digital Games Research Conference, November 4-6* (pp. 30-45). Utrecht, the Netherlands: Utrecht University.
- Kiefer, B. Z. (1995). The potential of picture-books: *From visual literacy to aesthetic understanding*. Merrill, WI: Merrill.
- Kiefer, B. (2010). What is a picture-book, anyway? The evolution of form and substance through the postmodern era and beyond. In *Postmodern Picture-books* (pp. 21-33). London: Routledge.
- Kress, G. R., & Van Leeuwen, T. (1996). *Reading images: The grammar of visual design*. Hove, UK: Psychology Press.
- Landau, D., & Parshall, P. W. (1994). *The Renaissance Print, 1470-1550*. :New Haven, CT: Yale University Press.
- Lewis, D. (1996). Going along with Mr Gumpy: polysystemy and play in the modern picture book. *Signal*, 80, 105.
- Madej, K. (2003). Towards digital narrative for children: from education to entertainment, a historical perspective. *Computers in Entertainment (CIE)*, 1(1), 3.

- Mäkelä, M. (2007). Knowing through making: The role of the artefact in practice-led research. *Knowledge, Technology & Policy*, 20(3), 157-163.
- Mangen, A. (2008). Hypertext fiction reading: haptics and immersion. *Journal of research in reading*, 31(4), 404-419.
- Marantz, K. (1977). Picture book as art object-call for balanced reviewing. *Wilson Library Bulletin*, 52(2), 148-151.
- Meek, M. (1992). Children reading now. In M. Styles, E. Bearne, & V. Watson (Eds.), *After Alice: Exploring children's literature* (pp. 172–187). London: Cassell.
- Meggs, P. B., & Purvis, A. W. (2006). *Meggs' history of graphic design*. Hoboken, NJ: Wiley.
- Moore, A. (2016). *Sonic Art: An introduction to electroacoustic music composition*. London: Routledge.
- Moustakas, C. (1990). *Heuristic research: Design, methodology, and applications*. Thousand Oaks, CA: Sage Publications.
- Muratovski, G. (2015). *Research for designers: A guide to methods and practice*. London: Sage.
- Nikolajeva, M., & Scott, C. (2000). The dynamics of picture-book communication. *Children's Literature in Education*, 31(4), 225-239.
- Nikolajeva, M. (2003). Verbal and Visual Literacy. The Role of Picture-books in Reading Experience of Young Children. In N. Hall, J. Larson & J. Marsh (Red.), *Handbook of Early Childhood Literacy* (s. 235-248). London: Sage.
- Nodelman, P. (1988). *Words about pictures: The narrative art of children's picture books*. Athens, GA, University of Georgia Press.
- Nugent, C., & Frederico, A. (2013). Meaningful Animation in E-Picture-books. In *Confia: 2nd International Conference on Illustration & Animation*. Porto, Portugal: IPCA (pp. 463-478).
- Page, R., & Thomas, B. (Eds.). (2011). *New narratives: Stories and storytelling in the digital age*. Lincoln, NE: University of Nebraska Press.

- Pinto, A. L. (2014). Touch, read and play: enhancing the reading experience of hybrid-enhanced children's picture-books. In *Proceedings of the 13th Conference on Interaction design and children (IDC'14)*. Retrieved from http://idc2014.org/wp-content/uploads/2014/09/idc20140_submission_212-Pinto.pdf Accessed April 18, 2018.
- Ryan, M. L. (2002). Beyond myth and metaphor: Narrative in digital media. *Poetics Today*, 23(4), 581-609.
- Salen, K., & Zimmerman, E. (2004). *Rules of play: Game design fundamentals*. Cambridge, MA: MIT press.
- Sargeant, B. (2015). What is an e-book? What is a book app? And why should we care? An analysis of contemporary digital picture books. *Children's Literature in Education*, 46(4), 454-466.
- Schön, D. (1983). The reflective practitioner: How practitioners think in action. *London: Temple Smith*.
- Smeets, D. & Bus, A.G. (2013). Picture storybooks go digital: Pros and cons. In S.B. Neuman & L.B. Gambrell (Eds.), *Quality reading instruction in the Age of common Core Standards* (pp. 176 – 189). Newark, DE: International Reading Association.
- Smith, H., & Dean, R. (Eds.). (2009). *Practice-led research, research-led practice in the creative arts*. Edinburgh: Edinburgh University Press.
- Smy, P. (2012). Picturing words: Creating illustration for a novel. *Book 2.0*, 2(1-2), 77-98.
- Sipe, L.R. (2011). The Art of the Picture-book. In S.A. Wolf, K. Coats, P. Encisco, and C. Jenkins (Eds.), *Handbook of Research in Children's and Young Adult's Literature* (pp. 238–252). New York: Routledge.
- Ugnow, J. (2009). *Nature's engraver: a life of Thomas Bewick*. Chicago, Il: University of Chicago Press.
- Zheng, W. (2003). About Illustration in Books. *Arts Exploration*, (1), 68-69.
- Whalley, J. (1996). The development of illustrated texts and picture books. In P. Hunt & S. Bannister Ray (Eds.), *The international companion encyclopaedia of children's literature* (pp. 220-230). London: Routledge.

Yokota, J., & Teale, W. H. (2014). Picture books and the digital world. *The Reading Teacher*, 67(8), 577-585.