

ANGLIA RUSKIN UNIVERISTY

FACULTY OF ARTS, HUMANITIES
AND SOCIAL SCIENCES

THE UNFLATTENED PICTUREBOOK: A
PRACTICE-BASED INVESTIGATION INTO THE
USE OF THE PHYSICAL FORM OF THE BOOK-
OBJECT AS NARRATIVE LANGUAGE

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ABSTRACT

FACULTY OF ARTS, HUMANITIES
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DOCTOR OF PHILOSOPHY

UNFLATTENED DESIGN: PRESENTING THE NARRATIVE OF A
PICTUREBOOK USING THE PHYSICAL NATURE OF THE BOOK-OBJECT

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In the thesis, I define picturebooks that emphasise the importance of using the physical book-object to convey the narrative as unflattened picturebooks. They can be seen as the evolution from movable books which employ the design principles for integrating further types of play into picturebooks through the use of book-objects. They enhance the effect of reading the book on children's development, while also presenting a more engaging narrative.

Within this context, this practice-based art research took place to explore the relationship between the narrative and the physicality of the book-object. It also aims to provide a framework for designing unflattened picturebooks and make a connection between the 'academic' and 'practitioner'.

The thesis is divided into four main processes: 1) clarifying the definition and features of unflattened picturebooks, 2) analysing published unflattened picturebooks, 3) studying the design method of unflattened picturebooks from the established artists, 4) performing, documenting and analysing my own practice.

My findings firstly are the three narrative attributes of unflattened picturebooks: spatiality, materiality and dynamics. Designers need to carefully consider and innovate upon these attributes through the book design process. Secondly, during this research, I designed three picturebooks. The reflective practice played a fundamental role in exploring and generating the practical design framework for unflattened design. I concluded that using constraints is vital to the unflattened picturebook design process and Bruno Munari's design process can be employed as a useful tool for designing unflattened picturebooks.

Keywords: picturebook, book-object, picturebook design, book design, participatory, reflective practice

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Chapter 1. Introduction and context

In developed countries, e-books and high-quality interactive phone or tablet applications are expanding the market. Digital books are commonly used to engage children with reading. However, sales data indicate printed book sales have been higher than e-books in recent years, especially in children's books (Onwuemezi, 2016; Johnson, 2018). E-books will not easily replace the sense of ownership and sensorial experience that a well-designed physical book provides.

More than other types of books, picturebooks are better suited to the physical form. Picturebooks help children understand ownership and establish a physical connection with the book by allowing them to manipulate the book-object. Furthermore, children's picturebooks have told stories via the physical book medium for over one hundred years, and during that time, they have formed a unique book structure (Figure i).

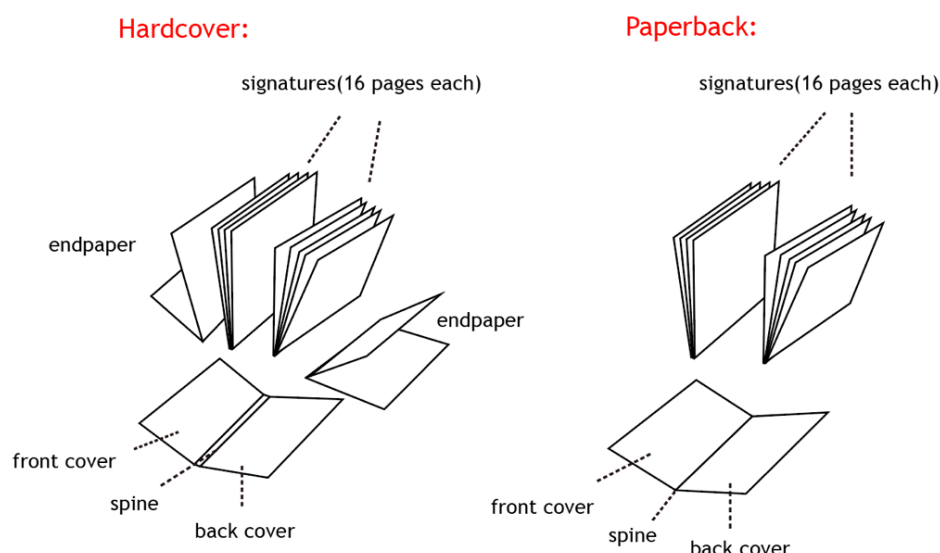


Figure i The structure of picturebooks (based on the diagram created by John Shelley (John, 2013))

For example, picturebooks are created to fit within a certain number of pages, normally 32 or 40 pages, and turning the page is an important part of the

experience, because picturebook makers use it to control the tempo of the whole story and the structure of the plot (Gressnich, 2012). It therefore seems reasonable to assume that physical picturebooks will not be replaced by digitalized versions in the near future.

In comparison to the design of conventional books for adults, which follow specific rules because they need to hold large blocks of textual information, children's picturebooks are relatively open (Haslam, 2006). This is because picturebooks are image-driven books through which the artists can create their own rules depending on how they want the reader to experience the stories (Haslam, 2006). Using this open mode of creation, a growing number of picturebook artists have been making picturebooks that not only communicate the story through their verbal-visual interplay but also convey their narratives using the physical form of the book-object. Artists involved in such books include designers from relevant fields such as graphic design, book design and even architecture. In this thesis, I name such books 'unflattened picturebooks' (Dong, 2020). The narratives in these books, such as 'Nella notte buia'/'In The Dark Of The Night' (1956) by Bruno Munari or 'Trouve- le?'/ 'Found it? (2002) (Figure ii, Figure iii) by Katsumi Komagata, are told entirely or in part through the physical nature of the book.



Figure ii *Trouve- le!* (Komagata, 2002)



Figure iii *Trouve- le!* (Komagata, 2002)

Designing this kind of picturebook is very different from making conventional flat-printed picturebooks; they require that the artist consider not only text (if included) and illustrations, but also the book-object itself because it is also used to convey the story. To do so, the artist needs knowledge that includes but is not limited to picturebook-making, crafting, printing technology and design ability. Outstanding designers such as Bruno Munari, Katsumi Komagata, Louis Rigaud and Marion Bataille have created a wide variety of picturebooks with the structure of the physical book at the foreground of their design.

The amount of unflattened picturebooks being published has increased significantly, especially in recent years, partly because of the availability of new technologies (Hendrix, 2008; Leith Sam, 2011). Books using special printing materials such as film transparencies, translucent and textured papers, and thermochromic ink are becoming more accessible than before. The laser-cut technique is also commonly used. The development of printing techniques has brought the cost down for publishers while giving the artist more space for innovation.

Academics such as Bettina Kümmerling-Meibauer, Sandra L. Beckett, Carole Scott and Rebecca-Anne C. Do Rozario have started to pay attention to these books. However, most of their analyses focus on the education and literary perspectives—for instance, how readers interact with these books or how their materiality affects children's cognition. Unflattened books are yet to be recognised as a practice-based research topic. Many resources written for practitioners discuss picturebook-making in the context of painting and

illustration. ‘Illustrating Children's Books: Creating Pictures for Publication’ (2004) by Martin Salisbury and ‘Writing with pictures: how to write and illustrate children's books’ (1985) by Uri Shulevitz are two famous examples of this. There are relatively few resources (Munari, 1981; Trebbi, 2014; Lee, 2018) available on guiding picturebook makers to consider and use the book-object as part of the content from a designer’s perspective, compared to the wealth of resources for considering verbal-visual interplay in conventional picturebooks.

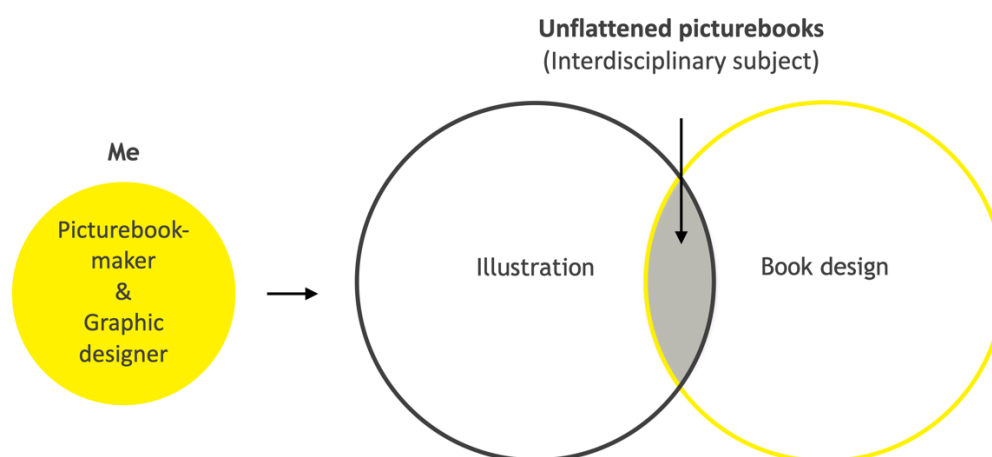


Figure iv The precondition of the research

As a practitioner in both picturebook-making and graphic design, I understand this is because the interdisciplinary nature of the unflattened picturebook occupies a poorly defined grey zone between illustration and book design (Figure iv). For this reason, neither designers nor illustrators have extensively studied this area. Therefore, few academic or practical resources are available. Thus, this thesis proposes to fill the gap between illustration and design in picturebook-making. It will focus on using ‘designerly ways of knowing’(Cross, 2006) as an analytical tool to understand and work out the key to designing unflattened picturebooks and to use the book-object to convey the narrative in part or in full.

1.1. Personal, educational and professional context

At the beginning of this chapter, it is necessary first to explain why I chose this subject and why I am qualified to study it. I grew up in China and received little

exposure to picturebooks as the market there had not yet undergone its recent rapid growth. Instead, my exposure to animated films stirred my interest in sequential art and storytelling. I was especially influenced by films such as 'Where is Mama' (1960) by Wei Te and 'A Clever Duckling' (1960) by Zheguang Yu, which used traditional Chinese ink painting techniques, paper cutting or puppet animation. These stories were interesting, the characters vividly designed and various traditional Chinese art forms displayed. To pursue animation as a career, I studied animation at the Communication University of China. I was excited to be involved with an art form that allows characters to be 'alive'. My first place of work after graduating from college was as an animator at the National TV broadcaster, CCTV. As animation is an industry with a clearly defined division of labour and is very time consuming, this work taught me a lot about animation but did not allow me to be freely creative.

After a year of this, I began three years of concept and graphic design work in different children's product companies, to have more creative freedom. The nature of these jobs was between graphic design, product design and concept design, and required 'design thinking'. All of the projects had a clear design aim, and everything needed to be planned carefully. I developed my understanding of what design is through these jobs, which also helped my research. All of the cartoon characters I created were made into toys. Being able to feel the materials and shapes of these characters and to play with them was a very different experience from seeing them only as flat illustrations. Through this experience, I became very interested in product design. The last job I had before I came to the UK was helping design a children's indoor theme park. I was responsible for the main visual design and mascot design. Although this work was very similar to the previous jobs, it was more strictly defined design work. Every step had strict requirements, and the product was modified repeatedly. For example, a slide area needed to follow certain height restrictions and have predetermined shapes. Our design had to fit within these functional constraints, but the shape and appearance still needed to have visual identities to express our 'utopian world'. Although it seemed these restrictions were barriers to creativity, they often stimulated my imagination to work more effectively. They made my goals clear and direct. This

work further cultivated my design ability and provided a framework for this PhD design research project.

When I worked for the theme park, I also had a peripheral project, which was to create a picturebook using the theme park mascots. That was the first time I made a picturebook. I realized it covered all of the creative work I loved: storytelling, design and illustration. The project inspired me to apply to the children's book illustration MA course at Anglia Ruskin University. This course contains four modules: 'observation' emphasises the importance of seeing and drawing, 'sequential images' trains the students to master visual storytelling skills, 'diploma review' is the warm-up for making a completed picturebook, and 'master stage' is an intensive training to be a qualified picturebook artist. All the modules are organic, linking with each other and emphasising the importance of practice. I found many similarities between picturebook-making and animation. They are both sequential art and multi-disciplinary. However, they are very different mediums; a picturebook is a book, which requires physical engagement, while an animation is a film—only requiring passive watching. A book has its own nature and unique ways to form the story. In this year and a half of study, I came to understand what a book is and established a strong connection with the physical book-object. During my MA, I created a total of three books, of which 'Mine!' (Dong, 2017) (Figure v) was published by a British publishing house—The Salariya Book Company, when I graduated. I also created a concertina book 'Good Morning, Good Evening' (Figure vi) which was an early experiment in using the book form to convey part of the story.

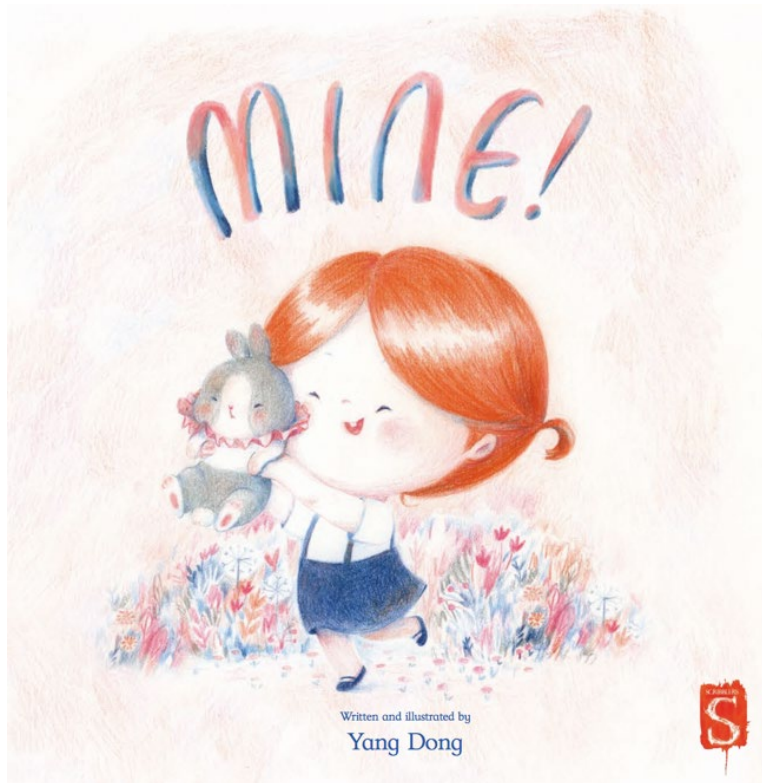


Figure v The cover of *Mine!* (Dong, 2018)



Figure vi *Good Morning, Good Evening*

Encountering Munari's picturebooks was an inspiration for my research direction. 'Different, colourful pages, die cut pages. Full of surprises, new emotions, different games in every opening' (Rauch, 2012, p. 12). His picturebooks are not only children's picturebooks; they place a stronger emphasis on art and design. He mobilises more sensory experiences in his books than just visual narrative expression. These books, like animations, feel 'alive'. They are also works of design, which made me generally appreciate the ingenious and careful

arrangements made by the designer. I started asking myself: ‘How was this kind of picturebook designed?’ I recognized that this is an art form found in-between design and conventional picturebook-making. I decided to research and create such picturebooks, because I thought my previous product design experience would be of great help to my own research and creative practice. My design, illustration and animation experience provides a framework in which I am uniquely situated to research this art form and perform my own practice. Through this, I hope to add new knowledge to the field of picturebook making.

1.2. Definition of a picturebook

It is generally accepted that picturebooks are books which contain images and text and are made primarily for children. However, there is more to the picturebook than children-oriented texts and images, and it must be carefully defined in order to understand how the picturebook has evolved in recent times, and where it may yet go. Barbara Bader, the author of ‘American Picturebooks from Noah's Ark to the Beast Within’, defines a picturebook:

A picturebook is text, illustrations, total design; an item of manufacture and a commercial product; a social, cultural, historical document; and foremost, an experience for a child. As an art form, it hinges on the interdependence of pictures and words, on the simultaneous display of two facing pages, and on the drama of turning the page. On its own terms its possibilities are limitless (Bader, 1976, p. 1).

This comprehensive definition provides a general framework for understanding what a picturebook is. It addresses several important factors of a picturebook, which can be summarised as: 1) The picturebook is a cross-disciplinary subject, covering a wide range of literature and art. 2) The expressive and narrative means of picturebooks are diverse and unique. 3) Every aspect of the picturebook is about design—in particular, designing an experience for children.

A further insight from a picturebook artist's perspective comes from Brian Wildsmith, a famous artist in the UK. On the Oxford University Press website page for Brian Wildsmith, one can read, Wildsmith said:

Picture books give an opportunity for a marriage between painting and illustrating, and the challenge of designing each page is very stimulating. I

believe that beautiful picture books of the right kind are vitally important in subconsciously forming a child's visual appreciation, which will bear fruit later in life (Oxford University Press, no date).

Wildsmith considers a picturebook to be the integration of painting, illustration and design. Aligning with Bader's definition, they both indicate that the book format affects the communication of the content, however, the word 'illustrate' has been commonly used to describe the creative process of picturebook-making. The Oxford English dictionary definition of 'illustrate' is 'to elucidate (a description, etc.) by means of drawings or pictures; to ornament (a book, etc.) in this way with elucidatory designs. Said also of the pictures themselves'(OED Online, 2020). To use 'illustrate' is because picturebooks evolved from illustrated books in which the text exists independently. The pictures only play a second narrative role and are mainly used to enhance and decorate the text.

The real picturebooks can be traced back to 1878, when the artist and illustrator Randolph Caldecott (1846-1886) initially began to elevate images as storytelling tools, not just decorate text (Salisbury and Styles, 2020). Caldecott pioneered the use of double-spread pictures in picturebooks (Lin, 2017). In his most important picturebook, 'John Gilpin' (1878), Caldecott used 31 images to present the story of John Gilpin, who was a popularly depicted figure of lore. Caldecott's version contains the highest number of illustrations for this story at that time, and it included two double spreads (Lin, 2017). This innovation used images to expand the story and made illustration a more important component of narration. Moreover, he also rearranged the position of the images and texts in the pages to create a dramatic effect for readers (Lin, 2017). Caldecott's works successfully augmented the value of the illustrator in picturebook-making. Therefore, the creative process of picturebook-making is more than simply illustrating. It is an image-making process; to interconnect the semiotic and the symbolic through different materials.

For Wildsmith, the image-making process which is how picturebook artists to construct their visual language and thoughts can be seen as the 'painting' process. Painting is an expressive process for artists; it is often a method of eliciting their emotions and opinions about the subject matter through a relatively personalized visual language. As Edward Hopper said:

Just to paint a representation or design is not hard, but to express a thought in painting is. Thought is fluid. What you put on canvas is concrete, and it tends to direct the thought. The more you put on canvas the more you lose control of the thought. I have never been able to paint what I set out to paint (Tillim and Eliot, 1958, p. 298).

Picturebook artists also experience the similar thinking and making process when they are delivering their thoughts and feelings to the drawing surface. Salisbury and Styles indicate:

While there are many artists working in the domain of the picturebook whose works are highly authorial, personal and often poetic statements, it may be argued that the ability to communicate visually is paramount (Salisbury and Styles, 2012, p. 59).

Even in an illustrated book, the illustrator expresses their interpretation of the text with their own visual language. The fairy tale, 'Cinderella', provides a good example of a classic character depicted by different artists. The story has been adapted into picturebooks countless times, and the different visual approaches can seem to create completely new retellings of it. In a version which Marcia Brown (1997) illustrated, muted tones and energetic cartoons convey charm and humour which affects the story by making the villainous characters feel less serious and more humorous. This is a stark contrast to the more ornate illustrations of the Errol Le Cain (1977) version (Nodelman, 1989). The illustrator is the visual author of picturebooks. When readers read a picturebook, they also follow the artist's thoughts about the story and appreciate their personal aesthetic.

In a trend beginning with Beatrix Potter's creation of the series Peter Rabbit from 1901, many illustrators, graphic designers and artists in different fields started creating their own picturebooks—through both writing and illustrating. They have been referred to as author-illustrators, but it's more accurate to call them 'picturebook makers' (Salisbury and Styles, 2012, p. 44). Scholars began to differentiate picturebooks from illustrated books, because in picturebooks the text and images have equal importance. Shulevitz redefines picturebooks as “‘written’ with pictures as much as they are written with words” (1985, p. 16). Writers also gradually began to realize the importance of giving the visual author more space to use their imagination to add more layers to the story. Writers such as Julia Donaldson and Jeanne Willis have collaborated with many artists and produced

many award-winning picture books. This reveals that the meaning of a story is aimed to be delivered through the harmonious relationship between visual and verbal communication in modern picturebooks.

Furthermore, in the children's picturebook publishing industry, not only publishers and editors, but also art directors and designers contribute to the book-making process. Art director of Walker books Amelia Edwards's said in the interview:

What we've done the last couple of years, which is a major improvement, is to have a top-class designer [...]. She works always with the artists. But it's not a last-minute thing, it's hours and hours. This is a major contribution, because the competition is phenomenal. I think the books have improved over the last ten years; they're really looking good (Marantz and Marantz, 1997, p. 25).

The development has led to picturebook-making becoming the work of a team, and picturebook makers (the author, editor, designer and publisher) are more aware of the book as a whole, in contrast to just thinking of the book as a way of binding some text and images together. The ways of making books have changed in response, and not just for the practical advantages of trend following. The picturebook makers began to be faced more and more with what Wildsmith has called 'the challenge of designing'.

If we examine picturebooks more closely as book-objects, they usually adopt the most common western codex book format— 'binding, even-sized pages, and fixed sequence' (Drucker, 2004, p. 74). A material book allows readers to physically turn over each page and flip over the book, which may be the most significant difference between a book and other storytelling media such as iPads or other electronic devices. Turning the page is even more salient in a codex format for a picturebook. Considering the printing cost and the restrictions in the printing industry; picturebooks usually have 32 pages or other multiples of 8, because 32 pages can be printed on a single large sheet of paper (Pattison, 2008). It is difficult to clearly tell an entire story with such a limited number of pages and so little text. Therefore, every page of a picturebook must convey key content; each turn of the page can influence the reader's perception. Even the speed at which the page is turned can also affect how the story is experienced by young

readers (Gressnich, 2012). Hence, a picturebook-maker needs to plan every page carefully in order to present the story in a logical and well-paced way. The planning includes—but is not limited to—the size and page count of the book, the colour palette, the art material, the arrangement of pictures and words, the paper, the title and cover design, etc. All of these elements must be selected to serve the content and heighten the aesthetic value of the book.

‘What is a Designer? He is a planner with an aesthetic sense’ (Munari, 2008, p. 16). Munari thinks design is about planning, except with the designer's mastery of production, aesthetics and marketing. Paul Rand also claims, ‘Design is relationships. Design is a relationship between form and content’ (Kroeger and Rand, 2008). Consequently, picturebook-making is more like a design activity. Picturebook makers not only need to create the images and balance the visual-verbal collaboration of the content but also plan the book itself as an object. They also need to work closely with the editor, the art director and printer to plan the book to create a suitable experience for children to explore. Thus, the term ‘design’ is more appropriate than either painting or illustrating for describing the process of making a picturebook. Therefore, it is essential to encourage picturebook makers to think and work like designers.

1.3. Definition of unflattened picturebooks

As new technologies are developed, they impact the book market but are also adopted by it at the same time. Picturebooks are no longer limited to two-dimensional flat pages. They can facilitate playfulness and interactivity in book form—sometimes through what are described as ‘novelty books’. Such books can be found mostly in the non-fiction section because their inherently entertaining and playful elements can breathe new life into dry knowledge. They are also found in the infant and toddler picturebook sector, where they help young children exercise their hand-eye coordination and make learning more fun. What is a novelty book? Anna Bowles, a former editor at children’s book publishers Egmont and HarperCollins has given a clear explanation:

In publishing, the term ‘picture book’ specifically refers to a storybook (or occasionally some non-fiction) for children aged 0-5. It can be hardback or paperback, but it always has full-page illustrations and only a small

amount of text per page. The standard format is something like A4, only more squarish. Novelty books are a lot more diverse and can feature anything from paper flaps to sound chips or other fancy additions. Quite often they are aimed at young children, but pop-up books for adults, for example, are still novelties. 'Novelty' is an umbrella term for any publication that physically consists of more than just flat pages and a cover (Bowles, 2010).

The explanations above define novelty books as being more like toys which are designed for infants and toddlers who are at their motor and physical development stage. Special built-in features such as pop-ups, fold-out pages, flaps, or hidden sound chips allow children to play with these books; therefore, the books focus more on encouraging children's fine-motor play than their literacy.

However, the picturebooks I aim to define here are those that provide their readers with active reading experiences and that seek to strengthen the narrative participation by engaging other sensory modalities, in which 'the narrative is told partially or entirely by the physical form' (Beckett, 2014, pp. 53–54). The design concept of these books fits Ulises Carrión's ideas which he emphasized in his essay 'The New Art of Making Books' (1975). Carrión considers a book 'as a totality' (p.5). He writes, 'A book can also exist as an autonomous and self-sufficient form, including perhaps a text that emphasizes that form, a text that is an organic part of that form: here begins the new art of making books' (p.1).

Carrión differentiates between 'old art' and 'new art' theories of bookmaking; in contrast to old art, in which the text alone conveys the intention, the new art emphasizes the interaction between the conceptual elements and the form of the book to convey the author's intention to the reader (1975). The picturebooks I aim to define here can be seen as prime examples of books designed following the new art theory, because they accentuate the use of the physical attributes of the book-object to play a role in the conceptual communication. The picturebook makers who design those books no longer regard a book as merely the carrier of text and/or pictures, but rather as a whole piece of art. Furthermore, the target readers are children above the age of four; this can even include adults. These books are not to be confused with novelty books despite their superficial similarities.

There have been many names given to such picturebooks by academics and designers. For example, Sandra L. Beckett states that these books have been highly

influenced by artists' books which are books 'almost always self-conscious about the structure and meaning of the book as a form' (Drucker, 2004, p. 4), describing them as 'unconventional books' (Sandra L., 2013, p. 20), 'innovative books' (Beckett, 2014, p. 57) and 'game-books' (Sandra L., 2013, p. 36). 'Unconventional' and 'innovative' are broad terms which do little to describe the nature of these books. Although there is a similarity with games in that these books are also experience-led, games are goal-based (Schell, 2015, p. 106) while these books are narrative-based. In France, these books are normally called 'livre animé' (animated books) and some other scholars call them 'interactive picturebooks' (Scott, 2014, p. 42) and 'altered books' (Scott, 2014, p. 37). Again, however, 'altered' tells us little, and most of these books are not interactive at all. I propose here that none of these definitions are specific enough to accurately describe this type of picturebook, because these books exploit the three-dimensionality of the book-object to convey the narrative.

Rosie Sherwood, a book artist and scholar, gives a precise explanation of this kind of book in her paper, 'Un-flattened: Book Arts and the Artist's Map':

Take the challenge of the flat sheet of paper. As book artists, a work depends upon the audience's haptic engagement, the book coming to life under our hands, animated, experienced. The book is not a static object: it resists flatness at every turn (Sherwood, 2017, p. 75).

Here, Sherwood uses the word 'un-flattened' in the title to describe the resistance to flatness in those artists' books she studied; these works employ tactile elements and the structure of the book to subvert the traditional two-dimensional topography of a book into a three-dimensional artist's map to present the feeling of a place. 'Un-flattened' encompasses visualization, intuition and easy understanding to refer to picturebook design concepts which exploit the physicality of the book as part of the content. Inspired by Sherwood, I therefore call them 'unflattened picturebooks' and call the method of creating this type of picturebook 'unflattened design'.

The primary characteristic of an unflattened picturebook is that it provides a participatory reading experience, and the narrative is told entirely or in part through the physical nature of the book. The physical nature of the book refers to the book constituents, different book formats and media. Because the storytelling

of unflattened picturebooks is strongly dependent on the book-object itself, the reading experiences they bring are also more sensory and participatory. They break down the conceptual distance between readers and the narrative by offering activities via the physical book. They tend to affect the readers' understanding of what books are and what kinds of reading experiences are possible. Therefore, 'participatory' is an appropriate word to describe this reading experience.

However, 'participatory' is frequently used synonymously with 'interactive' when describing some of the participatory picturebooks. To avoid such confusion, I define interactive as 1) a mutual relationship in which all the related subjects are affected by the others and 2) a context in which digital technology is used, such as in interactive classrooms or interactive games, etc. In the art field, 'interactive' is also used to describe artworks involving technology. Kwastek Katja claims:

However, artworks that actively involve the public—without the use of modern technology—are often not denoted as “interactive,” but as “participatory” or “collaborative” works. Initially, the concept of interactive art had not yet been introduced, and later it was often consciously avoided so as to distinguish these works from projects that use digital technology (Kwastek, 2013, p. 7).

Some picturebooks do offer interactivity to readers. Examples include books with nonlinear storylines which lead the readers to make active choices, such as the gamebook series 'Choose Your Own Adventure' by Edward Packard (1976-1998), or colouring books and mix-and-match books, such as '1000 était une fois...' (Ducos, 2015). Evidently, the interaction will occur between the readers and the book. However, if the story triggers readers' sensory experiences and involves their body movements, encouraging them to 'play' with the book as if it were a toy—but readers cannot influence the storyline or the book itself—then it is a participatory reading experience.

1.4. Unflattened picturebooks as an educational medium

The picturebook straddles art and literature. Through reading picturebooks, children can not only appreciate art—which improves their ability to comprehend visual codes—but also learn languages. Both of these forms of learning help them

understand the environment around them. Educator Joseph H. Schwarcz suggests the versatility of a picturebook can be a good educational resource for children.

We should strive to develop the whole range of the child's personality; verbal, abstract, spatial, visual, and other sensory capabilities have to be stimulated [...] Among these, the illustrated children's book is no doubt the most vigorous and promising (Schwarcz and Schwarcz, 1991, p. 3).

In this premise, picturebook makers must consider factors such as their readers' background (including cultural), their age, and their ability to read pictures or words if they are to develop suitable content for the target children. Munari states, 'children do not like illustrations that do not speak to them, no matter how well done they may be. A child knows when an illustration is trying to play a game' (Maffei and Munari, 2015, p. 103).

How picturebooks affect children's development has been extensively researched. The research has included investigations into developmental psychology and cognitive studies (Kümmerling-Meibauer, 2018), visual thinking (Yu, 2012), aesthetic perception (Doonan, 1993; Leddy, 2002) linguistic literacy (Gressnich, 2012; Kümmerling-Meibauer et al., 2015) and ability to form concepts (Messaris, 1994). The development of children's emotional intelligence (Nikolajeva, 2012, 2013, 2014; Silva-Díaz, 2015) and other sensory capabilities (Kümmerling-Meibauer and Meibauer, 2005) can also be influenced by picturebooks. Due to the popularity of e-books, research on the development of children's sensory cognition and perception has also become widespread in recent years (Antle, 2007; Antle, Droumeva and Ha, 2009; Bu *et al.*, 2018). However, studies on the educational function of unflattened picturebooks are difficult to find.

Unflattened picturebooks that emphasize the physical form are like toys. Along with affecting the reading experience, they can also bring the joy-of-use to young readers. What, then, are the benefits of giving these books the attributes of a toy? In general, a toy is an object which is designed for children to play with, and play is well established as an essential part of every child's life. The aim of play is to experience and explore the world. On one hand, children can see the world in different ways during play, use many different strategies to deal with difficulties and problems, and try many different ways of thinking—all in a safe situation in which they do not need to bear the consequences (Bruner, 1972). On the other

hand, play can also help children's cognitive and physical development. The role of play in supporting children's development has been thoroughly studied and is widely understood (Bruner, 1972; Petersen, 1988; Moyles and Adams, 2000; Haight and Black, 2001; Whitebread, 2012). Moyles' analysis of different types of play in schools shows that children's physical, intellectual, social, and emotional development occurs through many forms of play (Moyles, 1989).

Dr David Whitebread surveyed previous research on children's play and concluded that children learn through different types of play (2011). And he lists five broad types of play based on their role in the child's development as determined by contemporary research. These types of play are:

1. Physical play

Physical play consists of active exercise play such as dancing, rough-and-tumble play such as with siblings, and fine-motor play such as manipulating objects.

2. Play with object

This type begins when babies start to grab things and continues as they move on to early exploratory behaviours which often include biting and rubbing objects. This could be defined as 'sensori-motor' play as children are exploring the sensation of objects or materials and are thinking about what they can do with them. This type of play is closely related to the development of thinking, reasoning, and problem-solving capabilities. Children do not need very advanced or official toys to start with. Infants and toddlers only need basic household or natural items from daily life. A basket filled with various materials and objects suffices to entertain and stimulate children who are early enough in their development.

3. Symbolic play

Symbolic games are a type of play peculiar to humans. In the first five years of life, most children start to master a series of symbols, including spoken language, reading and writing, numbers, multiple visual media (painting, drawing, collage) music and so on. These learning components are important elements of this type of play. They help children develop their skills in expressing thoughts, emotions,

and experiences via sports, language, colouring, painting, collage, numbers, music and other means. Here, Whitebread states that children's use of multiple visual media (such as pictures, photographs, diagrams, scale models, plans, maps) to initiate such play can improve their visual cognition. As a visual-text combination media, the picturebook is an effective tool to train children's linguistic skills, image recognition ability and communication skills.

4. Pretence / socio-dramatic play

High-quality pretence play is a significant benefit to the development of children's cognitive, social and academic abilities. These are closely related to social and emotional learning, which helps children improve their ability to understand others, and also plays an important role in the self-regulation of emotions.

5. Games with Rules

Children enjoy playing games with rules from a young age. These games can help children understand rules, but the most important thing is that the social nature of the games themselves has a positive impact on children. These games include physical games and computer games.

According to Whitebread, each type of play can be combined with other types of play, and existing research evidence suggests that mixing multiple types of play seems to be the most beneficial for children's cognitive development. Whitebread also states children's cognitive development—such as thinking, understanding, remembering, and problem-solving—is highly related to the development of memory abilities (Whitebread, 2011). The Multi-Store Model of memory (MSM) developed by Atkinson and Shiffrin (1968) describes flow between three permanent storage systems of memory: the sensory register (SR), short-term memory (STM) and long-term memory (LTM). This model suggests the surrounding information is received by sensory receptors and then put into the sensory store. However, each sensory store can only accept one item of information at a time. Using the difficulty of listening to two people at the same time as an example, he explains that the brain is limited in its ability to receive information from a single sense. But humans make use of multiple senses at the same time, which supports the idea that multiple play modes can be performed

simultaneously. Therefore, it is vital to enlist the power of this multi-modal sensory stimulation for young children when they learn new things. ‘Particularly when they are being introduced to something new, they need to see and hear, touch and physically experience it in as numerous a variety of ways as possible’ (Whitebread, 2012).

Building on this foundation, the unique narrative method of interaction among pictures, text and other sensory modalities in the unflattened picturebook provides more sensory dimensions for children to obtain information—achieving a multi-sensory learning method at the same time. Suppose we expand the dimensions of perception again with picturebooks which can carry multiple types of play at the same time. This is a very meaningful innovation for children’s cognitive development, is it not? As discussed earlier, a growing number of picturebook artists have been making picturebooks with new modes of narration using the book-object. These are unflattened picturebooks; they invite children to learn from physical play— ‘reading’ them through play and explore playfulness and interactivity in book form, as well as from symbolic play—aiding their sensory cognition and hand-eye coordination along with their more general cognitive development.

1.5. Research aim and contribution

Once I appreciated exactly what an unflattened picturebook was, I recognized that their interdisciplinary nature requires the designer to synthesize ideas across multiple subjects and consider the book form during all design processes. However, this is a challenge because making different elements work together requires a different and more holistic way of thinking than merely conceiving of each element individually and then adding the elements together. It is not hard to imagine that the problem of combining illustration, material and techniques together could be very complex and that trial and error is required to produce an end design. The book needs to be practical and the different elements need to synergise in communication. The designer must also consider how all of these elements together will influence the reader.

Therefore, the creation of unflattened picturebooks requires the artist to have knowledge of children's picturebook-making and design thinking, to balance the relationship between content and design. There are only a few artist/designer-academics studying how to design unflattened picturebooks from a practitioner's point of view (Munari, 1981; Trebbi, 2014; Lee, 2018). This research focuses on how the physicality of the book-object can be employed by picturebook makers as a storytelling element/tool to provide an enhanced participatory reading experience.

I believe my research findings and study of potential materials through creative practice will benefit picturebook artists by enhancing their understanding of picturebook design and providing them with knowledge of materials for unflattened picturebook-making. This will also bring a practitioner's perspective to the small but growing body of research in the field of picturebook study, providing a greater understanding of the role of unflattened design in visual storytelling. Further, this study will also aid the teaching of picturebook-making and contribute to knowledge in the design field because there is relatively little practice-based research examining picturebook-making from a design perspective.

1.6. Research methods and strategies

Academic research through practice has been widely discussed in the field of art and design in the past decades. Christopher Frayling contributed a framework which defines three different perspectives to the research of art and design: 'research can take place *into*, *through* and *for* art and design' (Frayling, 1994). These represent three different ways of learning: first, learning from others, such as by historical research and literature review; second, learning by practice and studio work from artists themselves; and third, research based on the final outcome where the art 'speaks for itself'. Frayling quotes the aunt of novelist E.M. Forster, who provides clear examples to represent the three ways of learning: 'How can I tell what I think till I see what I say?'; 'How can I tell what I think till I see what I make and do?'; and 'How can I tell what I am till I see what I make and do?' (Frayling, 1994) Each are conceptually distinct ideas.

These three forms of research can exist independently or in combination. Although this is a landmark framework for art and design research which emphasises the importance of artwork and practice in art and design research, this framework is still too abstracted from direct practical concerns.

As practitioner-led research in art and design continues to expand, there is an ongoing debate about the role of art and design practices in the field of academic research. In contemporary research, two well-recognized research types exist; practice-based and practice-led research in art and design are mainly undertaken by higher degree students (M.Phil. & PhD.). The main differences between the two are:

1. If a creative artefact is the basis of the contribution to knowledge, the research is practice-based.
2. If the research leads primarily to new understandings about practice, it is practice-led.

(Candy, 2006, p. 3)

The UK's Arts and Humanities Research Council guidelines from 2001 require that research funded by their postgraduate funding schemes must have a well-defined context (Gray and Malins, 2014). In this thesis, the context is research from the perspective of a practitioner-researcher for practitioners. Graeme Sullivan also underlined the requirement of art practice in research:

Whether art practice is used for study into the theoretical or historical issues that shape the field, or through the use of media and technologies to expand knowledge of the process and practices of art, or for the purpose of using art-making as a vehicle to capture particular meanings, it is evident that the studio experience can be examined from many perspectives when considered within the context of research (Sullivan, 2010, p. 77).

In regard to the nature and importance of theoretical and practical needs of my research, here I have performed practice-based research. In my research, I have studied established design theories and practitioners' works to observe the design methods they have used. I have also designed my own 'unflattened picturebooks' to examine and produce new knowledge and understanding through practice.

Social scientist Donald A. Schön stresses the methodology of reflecting-in-/on-action as an effective way of gaining knowledge for practitioner-researchers.

‘When someone reflects-in-action, he becomes a researcher in the practice context’ (Schön, 2017). ‘Reflecting-in-action’ means the ‘knowing’ of new knowledge is in the practice and creative works of the practitioner (the artist and designers). ‘Reflecting-on-action’ means that after the event, the practitioner retrospectively analyses their making process. ‘As he tries to make sense of it, he also reflects on the understandings which have been implicit in his action, understandings which he surfaces, criticises, restructures, and embodies in future action’ (Schön, 2017, p. 50).

This concept has also been reaffirmed by Gray and Malins in ‘Visualizing Research: A Guide to the Research Process in Art and Design’:

Reflective practice, therefore, attempts to unite research and practice, thought and action into a framework for inquiry which involves practice, and which acknowledges the particular and special knowledge of the practitioner (Gray and Malins, 2014, p. 22).

This methodology gives clear guidance on how I should learn new knowledge from my own practice and studio work. Along with bookmaking, I kept a recording of the process in a reflective journal. It helped me to contextualise and form the process, to seek out the answers to my research, and to examine my approach to creative expression (Figure vii, Figure viii, Figure ix).

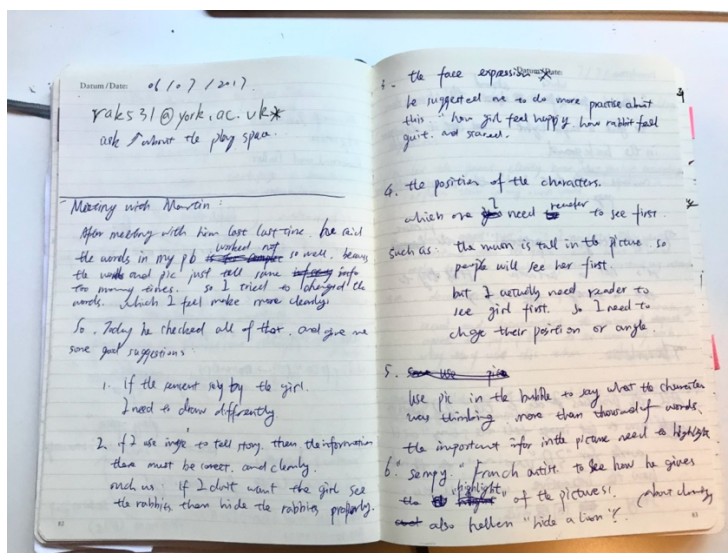


Figure vii image from the reflective journal

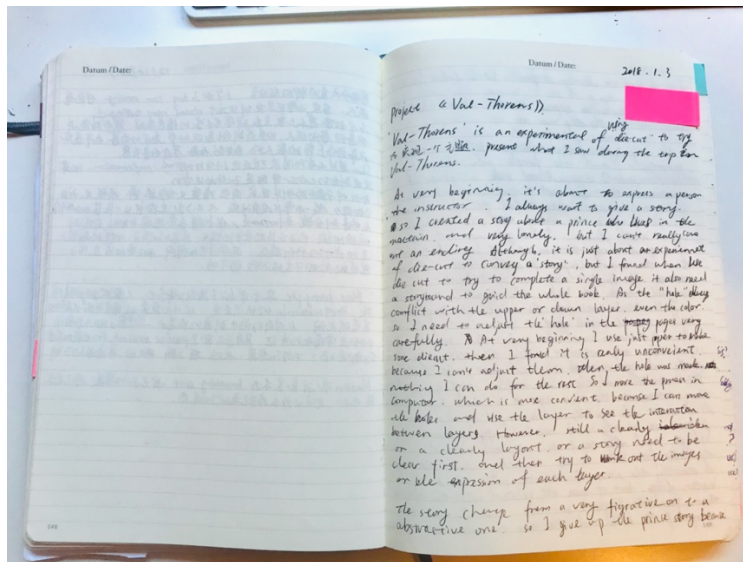


Figure viii image from the reflective journal

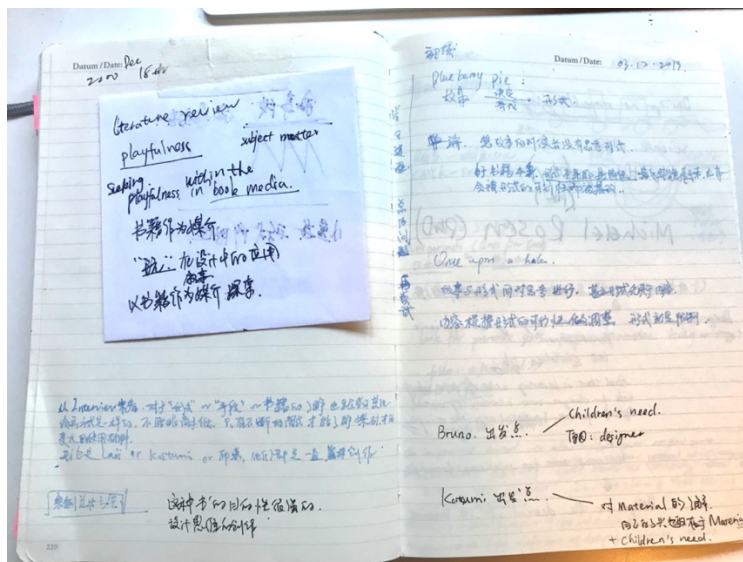


Figure ix image from the reflective journal

This thesis is more focused on encouraging practitioners to learn through their own practice; hence, I found that understanding how other designers make unflattened picturebooks to be essential for my study. Therefore, I combined Nigel Cross's 'designerly way of knowing' methodology with an application of Schön's reflective research methodology 'reflection-in/on-action.' 'Designerly ways of knowing' aims to tackle ill-defined problems (e.g. designing an unflattened picturebook) in a 'solution-focussed' way using 'codes' (practice) to translate abstract requirements into concrete objects (the unflattened picturebook)(Cross, 1982, p. 224). It emphasises the foundation of knowledge

based on reflection in and on the practitioner's own practice along with the analysis of existing exemplars:

One immediate subject of design research, therefore, is the investigation of this human ability—of how people design. This suggests, for example, empirical studies of designer behaviour, but it also includes theoretical deliberation and reflection on the nature of design ability. It also relates strongly to considerations of how people learn to design, to studies of the development of design ability in individuals and how that development might best be nurtured in design education (Cross, 2006, p. 100).

Cross states that knowledge of design resides in people (i.e. designers), in design processes and in the products themselves—it is a comprehensive way of learning (Cross, 1999, p. 5). This idea is very similar to one in Dr Nick Sousanis's academic graphic novel 'Unflattening' (2015), in which he suggests 'a simultaneous engagement of multiple vantage points from which to engender new ways of seeing' (Sousanis, 2015, p. 43). Therefore, to fully understand unflattened books, I used several research methods: 1) a literature review; 2) a case study; and 3) interviews to analyse and study how other practitioners explore 'unflattened design' through their artistic practice. The methods employed to achieve this were: seeking out academic resources in the field, such as reading these books about picturebook-making, design for children, book design and game design; cataloguing and analysing the published unflattened picturebooks; and doing critical reviews of key figures, followed by one-on-one interviews with practitioners to discuss their experience and attitudes to curating their own works.

Chapter 2. Review of existing artworks—from movable to unflattened picturebooks

The earliest children's picturebooks which aimed to offer activities within the physical book-object can be traced back to the movable books. Therefore, it is important to understand the origin of movable books and appreciate how these movable books employ the book-object in the present context. The innovation of the mechanisms and the development of the papercraft give us an idea of how this industry grew and how these books inspired modern day artists. Considering this past can also help us foresee how the industry may evolve in the future. Peter Haining (1980), Susan Lee Hendrix (2008) and Jacques Desse (2012b) have contributed to a review of movable book history that allows us to look at how the craft has grown and changed over time. Here I will summarise the history of movable books and provide examples of books which represent the predecessors of unflattened picturebooks—mainly according to these three researchers' literature.

2.1. A brief history of movable books

The book is perhaps the most important recording medium of human civilization. It also has the humbler role of providing artists with new creative fields (Doyle, Grove and Sherman, 2018). From scrolls to codex books (the format in which pages are individual sheets), books have been used by people throughout history and have been continuously improved with the development of technology (Doyle, Grove and Sherman, 2018). Artistic exploration through books ranges across time and technique from the drawn illuminated manuscripts in antiquity to the printed books of today. The book offers physical participatory experiences, and using the concept of 'the book as an object' can be traced back to books with movable elements inside— 'movable books':

Movable books are those books with pages containing devices that can be moved separately from the page itself either manually by the reader, or automatically when the book is opened to the page. Movable books also include books that can themselves be transformed in unusual ways, for instance by being folded into a different shape (Hendrix, 2008, p. 41).

2.1.1. 13th to 17th century

The first known evidence of books with movable elements was not from a book for children; it was instead found in a scholarly manuscript from the 13th century— ‘Chronica Majora’ by the English monk Matthew Paris (Hendrix, 2008). He innovated volvelles (moving paper circles) for rotating the circular calculation chart. This increased the ease of using the book by avoiding the need to rotate the book. The same technique is also found in the manuscript of Ramon Llull's 13th century poem ‘Ars Magna’ (Figure x).

...a complex system, using semi-mechanical techniques combined with symbolic notation and combinatory diagrams, which was to be the basis of his apologetics in addition to being applicable to all fields of knowledge. (Llull, Bonner and Bonner, 1993, p. 68)



Figure x The Volvelle in *Ars Magna* by Ramon Llull

In 1524, Petrus Apian, an academic of space science, published his ‘Cosmographia’ and it uses movable discs to present celestial movements (Hendrix, 2008). This book was very popular at that time and was translated into several languages and produced in 47 editions (Hendrix, 2008). Apian also used the same technique in his other book ‘Astronomicum Caesareum’ (1540).

At the end of the Middle Ages, lift-the-flap techniques started to appear in books of anatomical drawings (Hendrix, 2008; Desse, 2012b). A series of superimposed images were used to produce anatomical figures with layers. This allowed the human body to be observed in stacked layers, which is more intuitive and useful than observation through serial images of sections. The first Mix-and-Match book

(as it would be called today) is Father Leutbrewer's 'La Confession coupée'(Desse, 2012b). It was published in 1677 and frequently republished until the middle of the 18th century(Desse, 2012b). The reader needed to lift the strips to view the sin of which they had been blameworthy.

From these, we can see that the movable devices in the books from the 13th to 17th centuries were primarily produced for their functional use. Because the general population had a low rate of literacy at that time and the importance of children's education was hardly appreciated, there were almost no books produced for children. Also, books were expensive as the printing industry was not yet well developed, children's publishers did not even exist at the time (Hendrix, 2008).

2.1.2. 18th to 19th century

In the early 18th century, the general view about children's education began to change. Some stories and fairy tales specifically created for children started to appear and be widely published (Hendrix, 2008). Tales of Charles Perrault—such as his 'Mother Goose', 'Cinderella', 'Little Red Riding Hood', and 'Sleeping Beauty'—are still popular with children today (Hendrix, 2008).



Figure xi *Harlequin's Invasion; A New Pantomime* (Anon, 1770)

In 1765, the London based book publisher Robert Sayer first printed a series of 'Metamorphoses' which were also called 'turn-up' books or 'harlequinades' (Figure xi) (Hendrix, 2008; Desse, 2012b). These books can be described as movable books, and children became the target readers. Each book consists of two

single-engraved pieces of paper. One sheet was folded vertically into four sections. The other sheet was cut both horizontally and vertically into eight sections and attached to the top and bottom edges of each section on the first sheet, so that they could be opened separately. The whole piece was folded in four, like an accordion, and the cover was roughly attached. When the flap was flipped, the reader could see that half of the new picture was combined with the half of the image below. Therefore, the act of flipping one after the other could surprise the reader and make the story very pleasant to read (McLeish, 2008). Although ‘turn-up’ books are movable books with the basic mechanism— flaps, the movement gives enormous possibilities for the reader to participate in the story. Such movable books can be seen as the predecessors of unflattened picturebooks due to the relationship between the design and the narrative.

According to Desse (2012b), after harlequinades, many other books began to be produced which were inspired by the notion of presenting ideas by revealing the layer hidden underneath and innovating on the relationships between the layers. One example is ‘Paper Doll’, which was first published by London publisher S&J Fuller in 1810 and remains popular today (Hendrix, 2008; Desse, 2012b). In roughly 1830, the ‘slot book’ used similar ideas to put the paper figures in the concertina scene. ‘The Toilet’ can be counted as an early example of a truly lift-the-flap book produced by the artist William Grimaldi in the 1820s (Desse, 2012b). The benefit of using the lift-the-flap mechanism is it can hide and show different parts of the illustration, provide motion and allow the reader to manipulate the book-object. This has been adopted by many book artists to create a participatory experience for the reader.



Figure xii Comparison of two pages from the 1st edition of *Le livre joujou* (Brès, 1831)

In 1831, Jean-Pierre Brès was the first to introduce pictures associated with pull-tabs, to make pictures ‘alive’ (Desse, 2012a). He expresses this as ‘mettre en action’ (putting the scenes into action) in his ‘Le Livre joujou’ (1831) (Figure xii). In the introduction, he explains to his readers: ‘Afin que ce livre vous amusât davantage, j’ai voulu qu’il vous offrit quelques nouveautés dans les dessins qui y sont renfermés’ / ‘In order to make this book more entertaining, I wanted it to offer you some new features in the drawings contained therein’ (Desse, 2012a). Brès was also interested in creating books to entertain children because of his great interests in pedagogy and advanced consciousness of education (Desse, 2012a). His early recognition of the importance of play in children’s development may also be the theoretical guide for his creations. Desse wrote, ‘Au travers de tels livres jouets (deux termes a priori antithétiques), Brès essaie d’associer l’éducatif et le ludique, ce en quoi il est assez avant-gardiste...’ / ‘Through such toy books (two terms that are a priori antithetical), Brès tries to combine education with playfulness, which makes him quite avant-garde...’ (Desse, 2012a).

Brès’s work had a great influence on movable books. Brès can be seen as one of the first picturebook makers to combine ‘learning and playing’ in the design of his books. His books align with David Whitebread’s multiple ways of play, providing

stimulating sensory experiences for children using multiple sensory modalities. Brès also wrote many short stories for children and innovated the ‘Myriorama’, the card game, which is similar to today’s mix-and-match book (Desse, 2012a). The books he designed at this time are also the embodiment of the design concept of unflattened picturebooks.

In the 1850s, picturebook publishers and artists started to innovate on the overall book structure (Hendrix, 2008; Desse, 2012b). Dean & Son published peep shows (also known as tunnel books) which used page stacks to imitate scene layers. Dean & Son took advantage of the maturation of the printing technique called lithography by being the first publisher to produce movable books on a large scale (Hendrix, 2008). Dean & Son founder Thomas Dean said those peep books displayed the ‘life-like effect of real distance and space’ (Haining, 1980, p. 22). Another technique, known as ‘dissolving pictures’, appears in the 1860s. This is a technique ‘in which a system of different pictures printed on slits allowed one image to transform into another’ (Desse, 2012b, p. 11).

Up to the 1860s, the publication of movable books continued at a low level until Dean & Son became the first publisher focussed on producing books with 3D scenes (Desse, 2012b). The Deans started their own art studio and employed many skilful artists and craftsmen, and the company called themselves the ‘originator of children's movable books in which characters can be made to move and act in accordance with the incidents described in each story’ (Cullinan and Person, 2001, p. 562). Their books are the first true movable books (Desse, 2012b). The movable books rapidly became a nursery and playroom favourite and enjoyed a ‘golden era’ (Haining, 1980). Movable book artists such as Ernest Nister, Raphael Tuck and Lothar Meggendorfer sprang up outside of Britain.



Figure xiii *International Circus* (Meggendorfer, 1887)

Meggendorfer is credited as the forefather of modern pop-up books (Desse, 2012b). He designed over 100 pop-up books. One of the most famous is ‘Lothar Meggendorfer’s International Circus’ (1887) (Figure xiii), which presents a three-dimensional panorama about a metre long when unfurled (Desse, 2012b). From 1880 onwards, he innovated many different mechanisms with his books, which include titles such as ‘Lustiges Automaten-Theater’ (1890), ‘Lebendes Affentheater’ (1893). Desse writes,

From 1880 onwards his rich and varied works made use of all the different mechanisms, though were most often pull-tab books that were sometimes made of numerous different moving parts that were activated with just one tab, demonstrating a brilliance that has not been equalled to date. (Desse, 2012b, p. 11).

His books are like a real stage on paper, in which all the illustrated characters live and perform. His movable books established the foundation for the next generation of book artists. However, with the beginning of World War I, diminishing resources resulted in a significant decrease in the production of movable books (Haining, 1980).

2.1.3. 20th century

In the inter-war period, avant-garde publishers such as Tolmer, Gallimard and Le Père Castor pursued interactivity and learning through play by using books (Desse, 2012b). They also began to simplify the picture and pay more attention to the harmony of graphic design (Desse, 2012b). Tolmer published unique masterpieces such as ‘Le Petit Elfe ferme l’oeil’ by André Hellé (1924) and ‘La

Croisière blanche ou l'Expédition Moko-Moka Kokola (1928) by Jack Roberts—a modernist stencil book with brightly coloured movable characters(Desse, 2012b). Their peculiarity and originality made for rather distinctive qualities in that era (Desse, 2012b). In Alfred Tolmer's influential book *'Mise en Page: the Theory and Practice of Layout'* (1931) explored photography, typography, and illustration using unusual collage techniques—pochoir (stencil) combined with a coated printing technique, which is still used today (Desse, 2012b). The book continues to be inspiring for today's industry. These earlier creators had a great influence on the style of later artists and picturebooks; one of these influences is that three-dimensional books often tend to be more concise, abstract and conceptual today (Desse, 2012b). Furthermore, the tactile experiences provided by the coated papers are becoming even more popular in today's books.

A breakthrough occurred in 1929 when Theodore Brown created the first automated movable book, *'Daily Express Children's Annual'* Number 1, which was published by S. Louis Giraud. For the first time, the image sprung up when the pages opened (Hendrix, 2008). This was the first 'pop-up' book:

Pop-up books are a particular type of movable books that provide enhanced depth and motion. They use movable book mechanisms that open automatically as the page is turned and create a three-dimensional view. Flaps, transformations, pull-tabs, and volvelles must be manually operated, while pop-ups are operated by the opening of the book's page. (Hendrix, 2008, p. 66)



Figure xiv *How Columbus Discovered America* (Kubašta, 1960)

It was not long before paper-engineered products' vast potential was unlocked all over the world. In the 1960s, Vojtěch Kubašta became renowned for his creatively rich but simple and impressive works that utilised clever folding mechanisms

which generally consisted of a single sheet of paper (Hendrix, 2008; Desse, 2012b). He created more than 300 pop-up books and picturebooks in his life, such as 'How Columbus Discovered America' (1960) (Figure xiv) and 'Circus Life' (1960), amongst other works. Also in the 1960s, the old idea of the 'dollhouse' book gained fresh popularity thanks to a new paper mechanism—the v-fold, which allowed the 'floor' of the 'house' to drop down when the page was opened, creating a three-dimensional space. This space was often a room, like a doll house. This method became increasingly popular and complex throughout the 1990s, allowing readers to play with the book and create their own stories (Yang, 2015). In 1932, the American publisher Blue Ribbon Books came out with the name 'pop-up illustration' and registered 'pop-up' as a trademark (Hendrix, 2008). It was around this time that America started taking the forefront in movable books. Waldo Hunt (1920-2009) set up the company 'Intervisual Books', which published books using a range of mechanisms and kept production costs low by printing and making the books in countries such as Japan, Singapore and Colombia. He also created the term 'paper engineering' and 'paper engineer', which helped paper artists to gain status. In 1979, Jan Pieńkowski, a Polish-born illustrator living in England, won the literary 'Greenaway Award' for his book 'Haunted'. Desse (2012b) calls the period between 1960-80 the 'second golden age of the movable book'—the first being the 'Meggendorfer era'.

It bears mentioning that the possibilities of paper forms being explored were not limited to movable books. In movable books, they present the surprising three-dimensional effect and interactivities with the typical goal of merely amusing children, but many artists in different fields were also inspired by them and have used them as a part of the story in their own unflattened picturebooks. Such artists included Bruno Munari, a prominent designer and artist in Italy who designed his picturebooks in the 1950s by employing flaps and die-cut techniques to combine the movable elements with the story and to provide participatory reading experiences for children. He was also very concerned about the use of materials in the book and their impact on the reading experience. He designed several books which were purely focused on haptic reading experiences. The famous children's book author and illustrator Tove Jansson created her unflattened picturebook 'The Book About Moomin, Mymble and Little My' (1952) using die-cuts to present the

depth of the forest and bring a 'hide and seek' game experience to the readers. Other outstanding artists such as Susumu Shingu, Květa Pacovská, Katsumi Komagata, Louis Rigaud, Marion Bataille, Mauro Bellei, Hervé Tullet, Miloš Cvach and Fanny Millard have created a wide variety of picturebooks with the physical book at the foreground of their design, producing many variations for book forms and formats. Anouck Boisrobert and Louis Rigaud said:

Our aim isn't to show off technical accomplishments, but rather to create new ways of using a book. We like to have fun with the book as an object, playing with things like the constraints of its pages and its binding. Movable books allow you to break the book's traditional boundaries and create new forms. They also allow you to interact with the reader; who can be variously a spectator or part of the story. (Desse, 2012b, p. 127)

Although these books can be categorised as movable books, I believe it is more suitable to call them unflattened picturebooks because of their features.

From the earliest anatomical books using flaps to the modern pop-up book, movable book artists have constantly improved and innovated on previous mechanisms to unchain the book from flat-printed two-dimensional space. In my summary of the history of moving books, I have implicitly suggested that there are three means that movable book publishers and artists have utilised within the book-object to resist flatness: depth, kinetics, and sensorial experiences. Depth could involve using the space between two open pages to create pop-ups or using the volume of book-object itself to emphasize non-flatness. Kinetics entails that physical actions such as pulling, lifting or rotating parts of the book become essential movements for accessing the book. Sensorial experience means using special papers to bring sensorial experiences to the reader. Innovations in using each attribute have contributed to the form and structure of movable books. Artists no longer have to regard a book as the mere carrier of text and pictures; books can be seen as whole pieces of art. Haining said movable books 'portray a particularly fascinating method of putting 'life' into children's stories — the insertion of mechanical movement of their own' (Haining, 1980, p. 5).

2.2. Using the book as an object in unflattened picturebooks

Unflattened picturebooks are books primarily designed with a view to using physical elements to enhance or be part of the conceptual communication and emphasize the physicality of the book-object. Hence, movable books are the predecessors of unflattened picturebooks, and the three key means of designing movable books can be seen as instructions for developing unflattened picturebooks. Unflattened books include tactile elements and active or interactive design in their books to strengthen and improve the participatory reading experience. Therefore, to understand how unflattened picturebook artists have innovated on the printed book, it is essential to carefully consider and study the physicality of printed books. In this section, I first clarify the physicality of the book-object and then analyse selected published unflattened picturebooks as examples to convey how bookmakers use the book as part of their narratives.

2.2.1. Attributes of unflattened picturebooks

‘Books, regarded as autonomous space-time sequences offer an alternative to all existent literary genres’ (Carrión, 1975, p. 3). A printed book is a physical object, a volume (in space)—its physical form binding the information contained within into a set structure, accessible only through physically interacting with the book-object (Carrión, 1975; Smith, 1994; Drucker, 2004). Keith A. Smith (1994) further explains that the elements of a book are: the binding, the pages, text and/or pictures, turning pages and display, and suggests that the interconnections of the elements of a book form a book. Furthermore, in a printed book, all of the information cannot be accessed simultaneously. Reading a book is an active process; the reader must turn the pages, which means that strictly all of these transformations are based on physicality.

From all these, I will summarize three primary physical attributes of a book, two of which are inherent to the physicality of the book: *spatiality*, *materiality* and *dynamics*. Spatiality is the three-dimensional volume of the book. Materiality is the physical elements of the book. Dynamics is revealed only when the book is read and interacted with, as it is the movement produced from viewing the book through physical space.

As I discussed in section 1.3, the design of unflattened picturebooks can be considered as the ‘new art’ bookmaking. The conceptual elements and the book-object can be used to enhance each other (Carrión, 1975). I propose here that the three physical attributes of a book - spatiality, materiality and dynamics - are narrative attributes that unflattened picturebooks attempt to innovate further. The communication between these elements produces a conceptual, visual, and physical experience; they transform and enhance each other (Smith, 1994).

2.2.2. Spatiality

In Carrión’s new art theory (1975), he claims, ‘If two subjects communicate in space, then space is an element of this communication. Space modifies this communication. Space imposes its own laws on this communication’. The use of spatiality in unflattened picturebooks fits Carrión’s idea. The designer uses the space created by the physical book to represent the spaces in the fictional world and play a part as one of the conceptual elements to structure the reading experience and communicate with the reader.

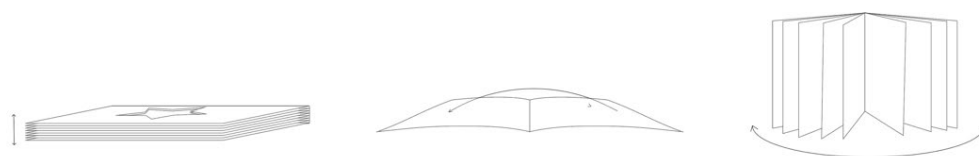


Figure xv Demonstrating the space in the book

The spatiality of a book can be the volume of the book itself or the spaces created between the open pages (Figure xv). The commonly utilised techniques of die-cutting (variable page size and holes), strung thread and transparencies have been categorised as ‘physical transition’ (Smith, 1994, p. 182). By using these techniques, ‘the action physically takes place down through the book block.’ (Smith, 1994, p. 182). Further, techniques such as pop-up and folding make use of the space between pages. Unflattened picture books using these techniques invite readers to participate in the story and ‘enter’ its world or become an integral part of the story. The use of spatiality is sometimes also combined with the dynamics of the book—the page turns through the participation of the reader. Here I will

analyse some examples of published unflattened picturebooks to show how they use spatiality to convey the narrative.

2.2.2.1. Works using ‘physical transition’

‘The Book about Moomin, Mymble and Little My’ (Jansson, 1952) is a representative example of an unflattened picturebook innovating on the spatiality of the book by using perforations and cut-outs (Figure xvi). The story is about Moomintroll encountering Mymble—who was looking for her missing sister, Little My—while he is on the way home. During their journey, they experience many difficulties before they finally return home safely. The storyline is a journey, and a journey presents a change of space and time. In conventional picturebooks, readers experience the change of time and space in the story through the relationship between text and sequential images. However, in this book, Jansson uses the spatiality of the book-object to imply the journey narrative and uses page-turning to represent time (Druker, 2006).

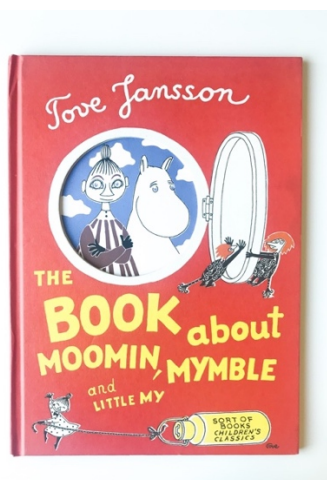


Figure xvi The cover of *The Book about Moomin, Mymble and Little My* (Jansson, 1952)

Here, Jansson employs cut-outs on every page to simulate the entrance that the characters use to enter the next space in the book (Figure xvii, Figure xviii). The cut-out pages, which combine the physical space of the book with the spatial construction of the story, create more layers for the spatial transformation in the story; the time and space changes in the story are presented through the book itself. And all the cut-outs are cleverly combined with the illustrations to connect the pages. For example, in the first double-page spread, Moomin’s gaze at the

Figure xviii Comparison of before and after turning the page in *The Book about Moomin, Mymble and Little My* (Jansson, 1952)

The reader participates in the story by helping the characters complete their challenges through a simple page-turning action. The whole book creates a tangible space in which the story takes place, giving readers an immersive reading experience. Jansson establishes a mutually dependent relationship between the book itself and the entire story; the spatiality of the book's physical structure becomes part of the narrative. This design requires the creator to consider the relationship between the logic of the story, the illustrations and the physical holes while they make the book. In order to achieve harmony, the designer needs to engage in much thinking and trial and error before they can present their narrative without any sense of inconsistency.

After Jansson's death, Puffin Books bought the copyright for the Moomin characters and commissioned some picturebooks based on Jansson's original works. One of them, 'The curious explorer's guide to the Moominhouse' (2016) used a similar design to 'The Book about Moomin, Mymble and Little My'. It also uses holes in the pages to connect the spaces in the story. However, this book misses Jansson's original intention of using the book form as part of the story. The new book is about Little My, who comes to visit different rooms in the Moominhouse. The storyline is also about the transformation in space. At first glance, the beautifully produced illustrations with the newest version of the Moomin characters looks friendlier than Jansson's original version. The cut-out in the page is also appropriately aligned with the images on the previous and next pages. However, in contrast to Jansson's original book in which the characters appeared to move through physical holes in the page, the design of the holes in the new book is only used to change the objects which share the same shape before and after turning the page—such as the picture frame on the wall or a pool of water on the ground. The doors that Little My uses to move from room to room are just flat-printed illustrations. The use of spatiality here is only for decorative purposes; it does not play a narrative role. If we compare 'The Book about Moomin, Mymble and Little My' to 'The curious explorer's guide to the Moominhouse' is useful for demonstrating how unflattened design can improve

the narrative of a book, and demonstrating what does not constitute the unflattened picturebook.

Transparencies are also commonly used as physical transitions to emphasise the spatiality of the book. Smith conducted in-depth research on the use of translucent and transparent pages in books. He states, 'It is a page which cannot stand on its own, cannot be removed from the book to be matted and placed on a wall. The page is not the picture. It is now subordinate, totally dependent on and integrated as part of the total book' (Smith, 1994, p. 43). The biggest feature of translucent and transparent pages in a codex book is the interaction of images on preceding and following pages. It can create a visual depth from the layered pages or cooperate with page-turning to create dynamic, animation-like effects. Images combine in one way with images that proceed them and combine in another way with images that follow them.



Figure xix *Trouve-le!* (Komagata, 2002)

In 'Trouve-le!' (Figure xix), all pages consist of images printed on translucent tracing paper. The use of layered translucent pages with printed elements produces an illusion of depth, which in this book is used to provide readers with an experience of travelling through the jungle. The surprise is produced by visually occluding illustrations behind each other so that elements of the illustration become visible with a turn of the page. For example, when the page with a leaf printed on it is turned over, an ant is revealed underneath on the next page. Of his book 'Book 5' (1967) in which the pages are made of acetate film transparencies, Smith writes, 'This book permits examination through pages-as-layers, going from the objects depicted closest to the viewer back through space to

the horizon' (Smith, 1994, p. 47). This description could apply in some ways to 'Trouve-le!' as well, in that it also makes use of pages-as-layers to produce depth and mirror the fictional world. This is clearly an established method by which the spatiality of the book can be used to produce an immersive reading experience.

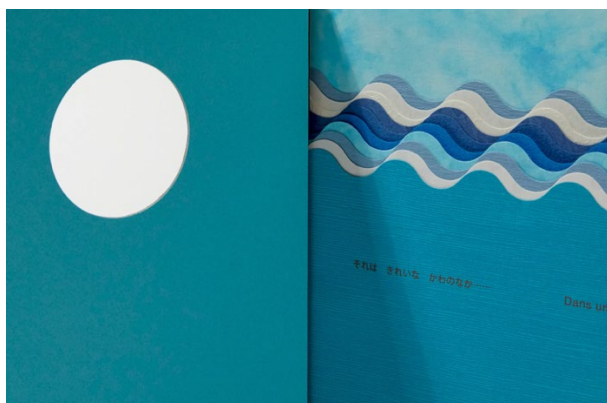


Figure xx *Blue-to-Blue* (Komagata, 1994)



Figure xxi *Blue-to-Blue* (Komagata, 1994)

The effect of pages-as-layers as part of the visual narrative element can also be achieved by using die-cut pages, and not just through transparencies and holes. For example, Komagata's book 'Blue-to-Blue' (1994) (Figure xx, Figure xxiii) is a story about a group of young salmon heading from a river towards the ocean to find their mother. He uses die-cut pages that are vertically offset from each other to produce an effect of layered waves, which simulates the whole environment of the story. In 'The sounds carried by the wind' (1994), Komagata uses layered die-cut pages to create the hills. When turning the page, it is as if the reader is travelling through the mountains with the music. In these books, the animal characters in the mountains and the sea are also cut from a single page as the

visual elements of the story. On the first page of the book, the reader cannot see these animals—only the scenery of the waves and mountains is visible. Every time the page is turned to reveal a wave or to ‘cross’ a mountain, the reader encounters a surprise. The combination of this die-cutting method with page-turning makes the reading experience of the story more intuitive and representative. It is as if the reader is in an immersive theatre; the book is an object and the page is the scene. Another important feature of these books is that the material of each page is different and also part of the content—which is what I will analyse in the materiality section.

2.2.2.2. Works using the physical elements of the book

When picturebook makers illustrate a book, most of the drawing process happens on a flat sheet of paper or screen. Hence, artists sometimes may forget the physical structure of the book during their creative process and ignore the importance of it. A common example is when an illustration is drawn in the centre of a two-page spread, and the fold of the page when the book is printed leads to some parts of the image being either hidden or only viewable at an angle. In ‘Suzy Lee: The Border Trilogy’ (Lee, 2018), she asks, ‘What if the distinct binding line wasn’t ignored but acknowledged instead? What if a book was made by actually using that binding point? What if the book’s physical components became a part of the story?’ (p. 9).

The binding line itself is a spatial consequence of the materiality of the book. The rigid paper and binding create a gutter when the book is opened, which is itself a spatial feature. In Suzy Lee’s books ‘Mirror’ (2008a), ‘Wave’ (2008b) and ‘Shadow’ (2010)—which she calls ‘The Border Trilogy’, she deliberately uses it and gives it meaning in the story.

In the new art (of which concrete poetry is only an example)
communication is still inter-subjective, but it occurs in a concrete, real,
physical space—the page. (Carrión, 1975, p. 3).

The narratives of these books from Lee are representative examples of unflattened picturebooks emphasising Carrión’s insight which make use of two-page spreads and the gutter.

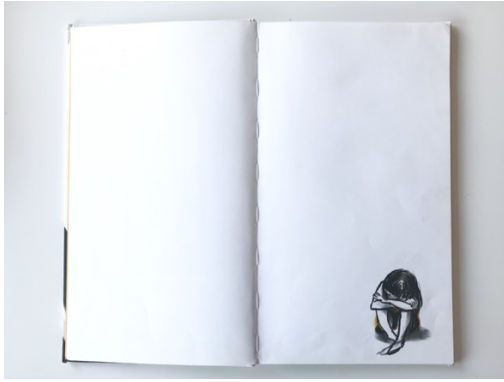


Figure xxii *Mirror* (Lee, 2008)



Figure xxiii *Mirror* (Lee, 2008)

In ‘Mirror’, Lee uses the facing pages as mirror-like reflective surfaces (Figure xxiii). At the beginning of the story, one little girl sits on the right page of the book by herself. When the page is turned, the same little girl appears on the left side of the book (Figure xxii). They look at each other in surprise as mirror reflections (Figure xxiii). In the following pages, they continue to reflect each other by doing the same things. From these images, the reader can easily understand the designer used the two facing pages to simulate a mirror, as mirrors are so common in daily life; when we see two such surfaces reflecting each other, we subconsciously associate them with a mirror (Figure xxiv, Figure xxv). Here Lee uses two pages separated by the gutter to refer to these two worlds, and we can read the drama on both sides. The characters start to interact with each other based on the book structure which pushes the story forward.

As the story carries on, the two little girls begin to enjoy themselves more and more, and their distance from the gutter of the book becomes less and less. This design also implies that their spiritual distance becomes closer and closer, and

finally they disappear into the gutter of the book. After that, the girls appear again but are no longer displayed symmetrically; the girls in the left and right pages perform the exact same pose, but now facing the same direction. The girls are no longer mirroring (Figure xxvi, Figure xxvii). Most readers would immediately realize something has happened. Their dance doesn't take long, and one of them starts to behave differently from the other. Then the girl on the left half of the page becomes dissatisfied with the girl on the right and pushes the spine. On the next page, the right half of the page becomes a 'mirror' and is pushed down. The girl on the left sits alone at the end.



Figure xxiv *Mirror* (Lee, 2008)



Figure xxv *Mirror* (Lee, 2008)

Smith suggests, 'the two-page spread is an element of the display. It is ever-present in viewing the book, the series or sequence, and the single page [...] The two facing pages have the compositional potential of the individual page, and more' (Smith, 1994, p. 180). Lee combined the space created by the structure of the book with the emotional lines of the story perfectly. This two-page spread

cleverly serves the story; it reveals the breadth of the designer's creativity, while the experience of this world excites the reader's imagination. Lee uses her books to present the possibility of how to place the centre binding fold and use the two pages which face each other to bring new value in a book.



Figure xxvi *Mirror* (Lee, 2008)



Figure xxvii *Mirror* (Lee, 2008)

The mechanism used in 'Shadow' is very similar to that used in 'Mirror'; they both use the left and right pages of the book to simulate the effect of a reflection. However, 'Shadow' uses a horizontal reflection instead of a vertical one, the story here is more complex and full of surprises (Figure xxviii). This story begins with a little girl playing in a warehouse by herself. When she starts playing with hand shadows, her imagination begins to map out the world on the side of the shadow. Lee said, 'The centre binding fold of the book becomes the border between the real world of the attic and the world of shadows' (Lee, 2018, p. 58). Later, the little girl's imagination creates the conflict in the story when a shadow wolf

escapes from the shadow world and chases her. Her imagination resolves the conflict as well when the shadow of the girl pulls her into the imaginary world and saves her. Compared to just a line drawn on paper, the gutter in physical space makes the dividing line between these two worlds more vivid and real (Figure xxix). The book uses the gutter to create the effect of a story within a story. Lee breaks down the real world and the fictional world by inviting the characters to interact with the real book-object which also shorten the distance between the reader and the fictional world.



Figure xxviii *Shadow* (Lee, 2008)



Figure xxix *Shadow* (Lee, 2008)

Lee's 'Wave' was the second in the border trilogy—coming between 'Mirror' and 'Shadow.' Like those, 'Wave' makes the gutter a key component. Lee wrote, 'The centre binding fold of the book is like a psychological margin' (Lee, 2018, p. 41). In 'Wave,' it initially separates a girl from the sea. At the beginning of the story, the girl—who wants to play in the sea—discovers that the gutter blocks the sea from coming over to her side, and she begins to tease the sea mischievously. When she realizes that she can walk into the other side of the book, she starts to play in the sea. Meanwhile, a huge wave rolls up, and the girl runs back to her seemingly safe and dry side of the book. However, the gutter has suddenly become more permeable—or at least is powerless against waves once they get big enough—and now does allow the waves across. The waves proceed to soak the girl. This is another case that combines the real space of the book with the image space.

Lee writes, 'Picture books aren't only about creating style with a couple of great pictures. Captivating picture books are those in which you can feel that the artist has dealt with the physicality of the book and kept the scale of the book in mind' (Lee, 2018, p. 90). Lee's trilogy shows us that creators can use a gutter to create different imaginative stories. Books such as 'Abner & Ian Get Right-Side Up' (Dave and Laura, 2019) and 'Come si legge un libro?' (Fehr and Quarello, 2018) (Figure xxxi) also make use of the physical edges of the book to interact with the story; the reader needs to keep turning the book to find the right direction to read the story. These books only use the basic structure of the book itself. They do not use three-dimensional structure, nor add-on elements which can also allow the readers to participate in the reading. They are not pop-up books, yet they should not be included in the conventional illustrated picturebooks category because their creators treat the spatiality of the book as an important part of the design like that of the paper engineers.

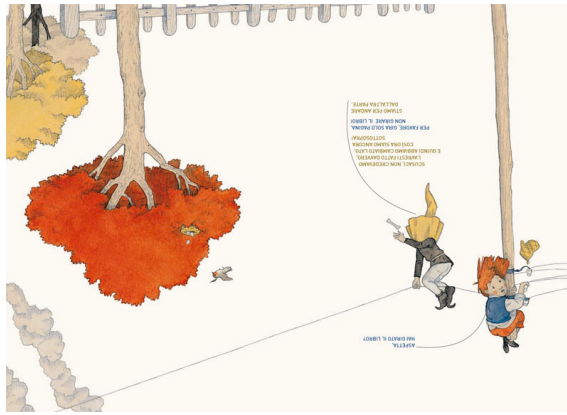


Figure xxx *Come si legge un libro?* (Fehr and Quarello, 2018)

From what I have observed, the use of spatiality is arguably the most common and intuitive among these three attributes of books for enhancing narrative elements. For this kind of unflattened picturebook, the space in the story and the book space are seamlessly integrated into a narrative. I suggest the creator should learn to observe and study the book as an object and think about how to use it in their own creations—how to combine the fictional space with the space of the book to create this unique communication with the reader through unflattened picturebooks.

2.2.2.3. Works using pop-ups

Louis Rigaud and Anouck Boisrobert have produced several well-known pop-up picturebooks together. Most of their books carefully consider the use of spatiality as part of the narrative. I will first introduce ‘Oh ! Mon chapeau’/ ‘That's my hat!’ (2014) because it is a typical unflattened picturebook made with a pop-up technique. Like most pop-up books, the main visual language is presented in three dimensions through paper art. However, this book is different from most pop-up books. In typical movable and pop-up books, innovation on spatiality is used purely to convert two-dimensional images into three dimensions in order to enhance the visual effect and aesthetic of the book—but it is not necessary for driving the plot in any meaningful way. Although these three-dimensional structures seem to put elements of the fictional world into space within the real world, the story still places the readers in the position of spectators. In contrast, ‘Oh ! Mon chapeau’/ ‘That's my hat!’ (2014) uses pop-ups to create three-

dimensional visual effects that also play an important role in conveying the narrative.



Figure xxxi *Oh ! Mon chapeau* (Boisrobert and Rigaud, 2014)

The book's story is about a boy who has lost his hat. He looks through different places in the city, but he can't find it because the hat was taken by a monkey who tries to tease him by hiding in different places. The paper mechanism used here is the parallel fold; it is not a complex technique in pop-up paper engineering, but the technique appropriately expresses overlapping structures found in different places in the city (Figure xxxi). However, the design is not only used to create a three-dimensional space. It also serves the hide-and-seek game between the boy and the monkey in the story. When the book is opened, the scenes pop out and display as a structure. The boy can be seen clearly on each page, but the monkey is always hard to find because he is always hiding behind the pop-up elements (Figure xxxii).



Figure xxxii *Oh ! Mon chapeau* (Boisrobert and Rigaud, 2014)

The creators used the spatiality of the book-object here to create multiple layers between the open pages and to serve the story; they hid the hat-stealing monkey under the pop-up layers so that the readers cannot see the monkey directly except by moving the book around to see past the pop-up elements. This design considers the ‘display’ as an element of the book (Smith, 1994, p. 171) to express the ideas and draw in the reader by making them interact with the book-object to obtain the information in a semi-immersive way. Rigaud said in an interview:

Pop-up is a way to play with the book-object and illustration. The animated book gives a lot of possibilities; it offers readers new ways to imagine, to read, to manipulate the book. I think that by combining these technical possibilities with narration and graphical styles, new reading experiences are created. (2018, unpublished, see the appendix)

Moreover, in the book, the creators confuse the reader by designing various shapes similar to the hat within other elements of the illustration. The visual and verbal information are contradictory, which increases the drama of the story; the text repeatedly claims there is not a monkey, but the monkey is there—it’s just that the reader must interact with the book to find it.



Figure xxxiii *Océano* (Boisrobert and Rigaud, 2013)

‘Océano’/ ‘Under the Ocean’ (2013) is another pop-up book designed by Rigaud and Boisrobert. It tells a story about a boat travelling around the world. Rigaud and Boisrobert made a ‘sea-level’ with a big piece of v-fold paper which can stand on the spread. This surface creates two spaces in one open spread—the world above the sea and under the sea (Figure xxxiii). The stereo-effect has a stronger visual impact for readers. When the book is opened, the scene above the sea level is presented to the reader. The text asks the reader questions such as where the captain is and what is under the boat to encourage the reader to observe the scene below the sea. When our eyes move below the sea level, the scenery above the sea is blocked by the pop-up representing the water surface, as if the reader really entered the underwater world. Because the artists use the three-dimensional structure to create many layers, occluding each other, this causes the reader to need to constantly move the book to find the narrative information between the layers. Therefore, the pop-up in this book is not only for producing a three-dimensional effect; the effect is also used to serve the story content with the book-object. If the scenery above and below the sea level were only drawn flat in the book, the reader would not have the experience of being immersed in the space.



Figure xxxiv *Popville* (Rigaud, Boisrobert and Sorman, 2009)



Figure xxxv *Popville* (Rigaud, Boisrobert and Sorman, 2009)

‘Popville’ (2009) and ‘Dans la forêt du paresseux’/ ‘In the Forest’ (2011) are two earlier works of Rigaud and Boisrobert which are also adequate case studies for using the spatiality (display) of a book. Both books use similar methods: they tell their stories in a way that shows the same place with changes over time. One is about the development of cities, and the other is about the changes caused by deforestation. The creators use the space of each spread to simulate the area where the story is taking place, and through each turn of the page, the scene changes to add more buildings or fewer trees as the city grows or the woods are gradually cut down. In ‘Popville’, each turn of the page adds to the scene rather than replacing it on each new spread, as using cut-outs over the area where popup elements have already been revealed creates the effect of starting from one building and growing larger (Figure xxxiv, Figure xxxv). This adds to the sense that the city is growing as the popup elements retained from one page to the next add a strong sense of

continuity in place, while the passing of time is still clearly shown. In ‘Dans la forêt du paresseux’/ ‘In the Forest’, the same technique is used, but in the opposite direction; the cut-out gets smaller on each spread as fewer trees remain (Figure xxxvi, Figure xxxvii). In either case, a sense of continuity of place is created through the use of this technique. While the pop-up elements are not required to produce this effect (flat illustrations could be used instead), the cut-outs are. This is an example of unflattened design because the reader participates in the growth of the city or shrinking of the forest through turning the page and changing which popup elements are visible. Again, these works show how unflattened design can engage the reader beyond illustration and text alone.



Figure xxxvi *Dans la forêt du paresseux* (Boisrobert, Rigaud and Sophie, 2011)



Figure xxxvii *Dans la forêt du paresseux* (Boisrobert, Rigaud and Sophie, 2011)

Compared with some pop-up books that have complicated paper engineering, the paper engineering of these books is not that intricate. However, all of the designs

in Rigaud and Boisrobert's books attempt to use the spatiality of the book to present their stories and encourage the reader to play with the book-object and engage with the narrative. Their concise graphic design also complements their pop-up designs—brief but not simple. Hence, these books are good examples of unflattened picturebooks with pop-up elements.

2.2.3. Materiality

'The book is a physical object. The hand-held book demands touching. Effort must be taken to view it' (Smith, 1994, p. 32). When we read a book, we manipulate it in our hands and feel the binding, the paper, the size, format and even raised inks. 'A mass produced book with its far reaching capabilities still remains a one to one experience' (Smith, 1994, p. 35). We can also smell and hear the paper as we turn the pages. Together, these physical elements are the materiality of a printed book.

2.2.3.1. Works innovating on tactile design

Book designers provide the tactile design with the materiality of the book, but commonly they are only decorations which are used to frame the content, pictures and text from which we primarily receive the message of the book. However, in some of the unflattened books, tactile design plays a functional role in the narrative. 'There is a predisposition to change in response to changes in the recipient, who is invited to 'touch with his own hand' in order to check the functioning of the work and of his own perceptual system' (Tanchis and Munari, 1986, p. 88). In unflattened books, how we receive the information is not limited to visual methods; haptic methods also inform. These books underline the materiality of the book-object and make the physical book itself a part of the content, 'a set of sensorial massage' (Figueiredo, 2012, p. 139).

Bruno Munari was an art practitioner, a great thinker, and a versatile artist often referred to as a 'Total Artist' (Munari and Cerritelli, 2017). He also pioneered the use of the materiality of a book-object to bear part of the narrative burden in picturebooks. 'Can a book as an object, regardless of the printed words, communicate anything? If so, then what? [...] Paper is usually used to support the writing and pictures and not to 'communicate' something [...]' (Maffei and

Munari, 2015, p. 23). As Munari questioned assumptions about the physical book-object's paratextual functions, he produced a set of 'libri illeggibili'. 'The purpose of this experimentation was to use the very material of books as a visual language, after exploring all its literary, philosophical, social and so forth communication possibilities to the full' (Maffei and Munari, 2015, p. 23). He omitted text from their pages and instead created other sensory experiences with materials such as geometrical shapes and colours of the pages (Figure xxxviii, Figure xxxix). The language communicated through the materiality was designed to hold the same weight as that in a traditional visual medium. The book structure constantly changes as each page is turned, creating richer visual experiences. Meanwhile, the texture and feel of the paper provide readers with tactile and audio experiences, which made the book an abstract artistic form (Tanchis and Munari, 1986). However, these books were only precursors to his unflattened picturebooks.



Figure xxxviii *Libri illeggibili MN1* (Munari, 1984)



Figure xxxix *Libri illeggibili MN1* (Munari, 1984)

With 'Nella notte buia' (Munari, 1956) and 'Nella nebbia di Milano' (Munari, 1996), Munari took touch (using materials), vision (using images), and symbols

(using text) as elements to convey the narrative together—creating multiple levels to convey meaning and provide an immersive experience for readers. ‘Nella notte buia’ uses three types of paper to simulate three different environments or journeys. The city in the dark night is printed with black paper (Figure xl) and bugs hiding in the grass printed on smooth (Figure xli), semi-transparent tracing paper (Figure xlii). ‘Traversing’ the grass, the reader is led to a cave, with the coarse and thick paper used to recreate the feel of soil. Deep down in the cave, a stream is presented by semi-transparent tracing paper, simulating the transparent and smooth properties of the water. This design creates visual depth and haptic experience. The reader can feel the fictional world by touching the paper. In Munari’s hands, books become ‘physically explorable entities’ (Negri, 2012, p. 67).



Figure xl *Nella notte buia* (Munari, 1956)



Figure xli *Nella notte buia* (Munari, 1956)



Figure xlii *Nella notte buia* (Munari, 1956)

If in ‘Nella notte buia’, Munari took the reader to ‘experience’ nature, then in ‘Nella nebbia di Milano’, the reader ‘roams’ the city. The book applies similar techniques as ‘Nella notte buia’, and both have three parts. In ‘Nella notte buia’, tracing paper is used to simulate mist (Figure xliii). Both sides of the paper are printed with solid colour—one with the front and one with the back of the objects in the mist. When the page is turned, the pictures on the back of the paper become obscured while those on the front become clear. This idea imitates the real-world effect observed when travelling in the mist—the closer the object is, the clearer it appears. This technique enables the objects to have depth on the thin paper (Figure xliii). Clearing the mist, readers enter the second scene—the circus (Figure xlv, Figure xlvi). In this part, coloured paper is predominately used, which forms a sharp contrast with the grey mist. Various die-cut techniques create a visual illusion with the previous and following pages. By turning over each page, readers are presented with surprises, as if they are watching an actual circus show. After the circus, the reader ‘traverses’ a park in the mist, with a sign on the page indicating the direction of ‘home’ and implying the end of this fantasy journey.



Figure xliii *Nella nebbia di Milano* (Munari, 1996)



Figure xlv *Nella nebbia di Milano* (Munari,1996)



Figure xlv *Nella nebbia di Milano* (Munari,1996)



Figure xlv *Nella nebbia di Milano* (Munari,1996)

‘Nella Notte Buia’ and ‘Nella nebbia di Milan’ are Munari's most famous children's picturebooks. Munari states:

children get to know the environment around them through all their sensory receptors, not just their sight and hearing; they also perceive tactile, thermal, material, acoustic and olfactory sensations. (Munari, 1981, p. 229)

As an artist who pursued the idea of a book as experience and not just simply something to read, Munari utilised a wide range of different materials and media to emphasize the materiality of the book-object to deliver the narrative.

Katsumi Komagata is also adept at conveying the narrative through the materiality of the book-object. He uses his broad knowledge of paper materials to apply a variety of different textured papers in his books. His most influential book is 'Blue-to-Blue'. Honglan Huang states:

the paper steps forward to take up a significant narrative role rather than retreating as the decorative backdrop or mere material support for the visual and textual elements. Not only do the qualities of the paper-like texture, transparency and luminosity evoke features of the landscapes and characters in the story, but the shapes of the paper and the die-cuts also create physical depth and form characters that spring into life at the turning, poking and caressing of the reader's hands (Huang, 2019, p. 293)

Like the books analysed in the spatiality section, this book primarily uses die-cut pages and text to convey the narrative. Yet in this case, the materiality is used to convey additional details. For example, the duckling's feather is made from paper with a feather-like texture. This extra tactile information enhances the reading experience but is not essential to the narrative—like the colour and shape of the paper. However, in 'A Cloud' (2012), materiality becomes increasingly important. The whole book is made of die-cut white paper but with different textures on each page (Figure xlvii, Figure xlviii). From the visual perspective, the slightly different white and textured paper seems like the sky with different weather conditions. The linen-textured paper is used to represent rain; some paper is matte and some glossy, giving a sense of depth to the clouds, while die-cuts allow multiple paper layers to be seen. The texture and the weight of the paper is given meaning here. It is not a mere bookmaking necessity. If this book consisted of only one type of paper, the reader would not experience all of this haptic information, and the detail of the narrative would be lost. The unflattened design with materiality makes both visually and haptic reading pleasant.

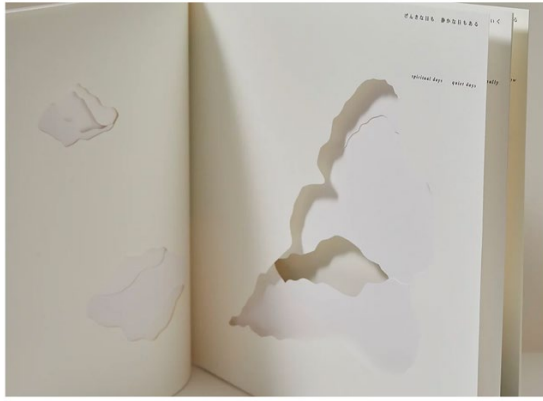


Figure xlvii in *A Cloud* (Komagata, 2012)



Figure xlviii *A Cloud* (Komagata, 2012)

2.2.4. Dynamics

Page-turning as a physical movement performs ‘a kinetic collage’ (Smith, 1994, p. 186). ‘The act does not reveal a collection of single pictures, but the total experience of the book, of which turning the page is an element. Turning pages helps *determine* the resulting imagery’ (Smith, 1994, p. 176). The act of physical page-turning is what most significantly distinguishes books from other media.

Picturebooks are sequential art, and turning the pages is used to control the rhythm of the story. The movement of page-turning in some of the unflattened picturebooks is emphasized and has been widely applied. Physical actions such as pulling, lifting or rotating parts of the book become essential movements to access the book and therefore create a dynamic reading experience, which also play an important role in storytelling. As dynamics cannot exist alone in a book, the spatiality of the book must be used to create the innovation on dynamics as the reader turns the pages.

2.2.4.1. Turning the flaps and the cut-out page

Rod Campbell is one of the most iconic designers using flaps in their works.

‘Dear Zoo’ (Campbell, 1987) is one of his most popular. The simple storyline is told with a single repeated narrative element; the protagonist wants a pet, and the zoo sends different animals, but for various reasons, they do not meet the protagonist’s requirements. The interesting point of the book lies in the interactive relationship between words, pictures and unflattened design. Regarding the animals received, the text only gives suggestive descriptions without explicitly identifying the animal. Only when the reader opens the flap do they discover what kind of animal is inside. The flaps are designed in the shape of different containers; the action of lifting the flaps replicates the action required to open a real container of that type. Moreover, the story uses the first-person perspective, the advantage of which is that the protagonist in the story becomes the reader themselves; it is also an efficient way to increase readers' participation.

Campbell is keen to use the book to invite readers to play with the flaps and discover lower-level pictures hidden behind them. His books such as 'Oh Dear!' (Campbell, 1989) and ‘Buster’s Birthday’(Campbell, 2008) all used similar techniques. The plots of his books are relatively simple and the storylines are repetitive, but this is because his target audience is the toddler. 'Repetition' is a useful technique within books for young children as it's part of learning to form words and anticipate what is going to happen next. His books are successful examples of early contemporary lift-flap books. He addresses the importance of participatory experiences by designing books with page-turning. The clever and precise use of flaps has also inspired many artists.

In Viviane Schwarz’s recent books ‘There Are Cats in This Book’ (2008), ‘There Are No Cats In This Book!’ (2010) and ‘Is There a Dog in This Book?’ (2014), the exploration of spatiality and dynamics of the physical book is more complex, original and idea-heavy. Compared to Campbell’s books, the storylines in Schwarz’s books are much richer. The evolving plots create a more complex and

diverse participatory experience.



Figure xlix Comparison of a double-page spread folded and opened in *There Are No Cats In This Book!* (Schwarz, 2010)

Schwarz used the book-object to present a space where three cats live. When readers open the book, the cats start to talk to readers in a conversational format to further involve the reader. The cats in the book guide the reader as they pull the pages and open flaps by talking and asking questions (Figure xlix). The references made in the text to the 'book' link the fictional world and reality through metafiction.

This method narrows the distance between the story and the reader by specifically drawing attention to what the reader is actually doing and not just to their role in the story. This contributes further to an active reading experience. But Schwarz's books do not only keep readers consciously active in the narrative. They also make the book itself a link between reality and the fictional world, allowing readers to participate physically. The use of these techniques makes these books examples of unflattened design. This type of narrative method is often found in unflattened picturebooks.



Figure l Comparison of two double-page spreads in *Is There a Dog in This Book?* (Schwarz, 2015)

From a design perspective, the most significant innovation in these books' use of flaps is that they were not only used for creating a sense of space—such as simulating opening a box cover or a door—but also for implementing an animation-like effect for the characters. For example, in 'Is There a Dog in This Book?', the cats and the dog are printed on the verso and recto pages, and the gutter of the books implies the estrangement between them. However, as the cats are printed on both the front and back of specific flaps when the flap is flipped over, the character moves with the direction of the flip and come close to the dog (Figure 1). The animation effect not only establishes a connection between the reader and the book, making the story more participatory, but also shows the relationship between characters more intuitively. It generates a dynamic change of position and posture and interacts with other elements on the page.

Another example, at the beginning of 'There Are Cats in This Book', the text tells the reader that there are cats on the next page. When the reader turns the page, there is a blanket-shaped flap that needs to be opened. Under the blanket flap, each of the three cats is illustrated on flaps which are stacked on each other. When the reader flips these flaps, the cats change position as the other side of the flap is revealed. The effect is as if they are woken up by the reader and start to talk to the reader (Figure 1i).



Figure 1i Comparison of two double-page spreads in *There Are Cats in This Book* (Schwarz, 2009)

Narrative drives the page-turning action in conventional picturebooks; page-turning may influence the pacing, but the reader is rarely aware of it (Smith, 1994). However, the page-turning in unflattened picturebooks sometimes is not simply a link between each element of the plot, but also a way of changing the space in the physical book-object and aims to invite readers to participate in the

stories; the reader is not a bystander but rather ‘a puppet master’ who plays a role in performing the story.

The seemingly simple act of page-turning plays an important part in Schwarz’s unflattened picturebooks. For example, in ‘There Are Cats in This Book’, some pages have been cut into special shapes which work with the illustrations on the pages to simulate that the page is pulled or lifted by the characters in the book (Figure 1i); the cut-out part reveals things the cats want on the next page. This method creates suspense and allows the characters in the book to communicate with the reader. The cats ‘ask’ the reader to turn the page for them to help them get to the next page. This page-turning movement physically shows the characters entering the next space, and this effect can only happen in the space created by a real book. At the moment the reader interacts with the book in this way, the book is materialized. It is no longer just a container for information. It can be played with and integrated with real space.

It is my contention that the complexity of the storyline in these books makes the overall participatory experience richer. The unflattened design also makes the plot more strongly connected. Turning the page is no longer just the act delineating each two-page spread, but is a deep part of the context of the entire book. The overlapping of pages shows a complete spatial relationship which invites the reader to explore. This is one of the methods unflattened picturebooks can take advantage of to use the dynamics of the book to create new ways of reading.

Instead of using opaque flaps or cut-out pages to invite readers to actively participate in the story, translucent or transparent pages combined with page-turning can also create dynamic and space-changing effects. In the materiality section, I have analysed the use of translucent materials in books to express depth and how the properties of these materials can simulate the form of elements in the physical world of the book. Transparent and translucent materials can also be combined with page-turning to express the dynamic characteristics in unflattened picturebooks.



Figure lii Comparison of before and after turning the translucent page in *Forever* (Alemagna, 2020)

Beatrice Alemagna's 'Forever' (2020) is an example of using translucent materials to reflect the dynamics respect of unflattened picturebook. This book uses different examples to show that nothing lasts forever except for love. The book is made from alternating translucent and opaque pages. When the translucent page is flipped, the elements in the page move from the right side to the left side of the page. The page-turning here expresses the concepts of changes, departures, and transformations. For example, birds fly from a hand to the sky, bubbles blow across a garden and rain passes as the page is turned (Figure lii). The use of tracing paper adds some depth to the images, which is similar to the effect of drawing two changed pictures on the verso and recto pages, but the dynamic effect caused by turning the pages contributes something new by making the concept of 'changing' more intuitive to the reader.

Although some actions such as pulling, lifting or rotating are also the key actions to experience in pop-up books, most of the time these actions are just used to create some dynamic effects which do not play a role in conveying the story. Therefore, only pop-up books that take the dynamics attribute of the book-object as an important component of the narrative will be regarded as unflattened picturebooks with respect to this attribute. This is the essential difference between unflattened picturebooks and other pop-up books.

2.3. Conclusion

Lu Jingren has proposed that:

Book design is a comprehensive designing practice involving all of the five senses. It is about the internal and the external of a book as well as the book as an object. But it is not about decorating a still object. It is to create vibrant lives that interact with the surrounding environment (Lu, 2020).

The five senses are sight, hearing, smell, taste and touch. Lu explained in his interview that the effect of sight is quite obvious. And we can hear the sound of page turning. More importantly, Lu suggests a reader can ‘hear’ a book by their heart. ‘Great design creates a pleasant reading rhyme.’(Lu, 2017). Different materials and prints provide distinct smells for the book. Flipping through books from different time periods also creates a scented sensation for the passing of time. Touch is the most sensitive sense among the five; smooth, rough, warm, cold... touches are direct and full of character. Last but not least, there is taste. Taste is an abstract experience here. Lu indicates the taste of books is a taste of beauty and spirits; it is related to aesthetics. ‘A good book must be able to address the other four senses before finally being completed by ‘taste’, so the reader’s heart and soul can be fulfilled’ (Lu, 2017). Therefore, book design is not flattened or superficial. Lu’s teacher Sugiura Kohei once told him that ‘the five senses are where book design should start with and ponder upon’(Lu, 2017).

Although the ‘books’ five sense’ proposed by Lu applies to all kinds of books, it is particularly relevant for unflattened picturebooks. Firstly, unflattened picturebooks provide their readers with active reading experiences that seek to strengthen the narrative reading experience by engaging other sensory modalities.

Secondly, the book as an object is as important as the images and text and shares in the narrative responsibility. Three main attributes of the book-object can be used to produce an unflattened experience: spatiality to represent the fictional spaces into the real world and produce a more immersive experience, materiality to extend the reading experience by introducing the sense of touch, and dynamics to enhance the interactive experience with the book. Together, these serve the content of the story and produce a sensorial and participatory reading experience.

Thirdly, from the analysis of these cases, we may conclude that there are many possibilities and choices of mechanisms for designing unflattened picturebooks. As Smith claims: ‘The mechanics of creating order is not the end, but the means of self-expression. Structuring books, as with any artistic technique, must be

mastered so that it becomes second nature’(Smith, 1994, p. forward). Moreover, not all books that use these mechanisms will be regarded as unflattened picturebooks. To implement unflattened design, the materiality, spatiality and dynamics of a picturebook must be carefully considered and innovated upon to produce a coherent, engaging and more fully sensorial reading experience. This role is distinct from serving only as entertainment. Having explored the possibilities of unflattened picturebooks, I will discuss the specific design methods in the next chapter.

Chapter 3. Critical examination of Bruno Munari's unflattened design methods

Bruno Munari (1907-1988) has been regarded as a prodigy in Italian design history and is often referred to as a 'Total Artist' (Claudio Cerritelli, 2017). He was an art practitioner, a great thinker and a versatile artist who made remarkable achievements in many fields, including: graphic design, fine art, photography, film, industrial design, literature and education (Tanchis and Munari, 1986; Zaffarano, 2012; Antonello, Nardelli and Zanoletti, 2017; Munari and Cerritelli, 2017). He was also a prolific design theory book author, producing works such as: 'Design as Art' (1971), 'Design e comunicazione visiva: contributo a una metodologia didattica' (1968) and 'Da cosa nasce cosa: Appunti per una metodologia progettuale' (1981).

Munari's method of working contributed greatly to his achievements. He explored the essence of objects through play and applied new possibilities (Lichtenstein, 2000). Among the numerous works he created, book art is a major part. Munari explored the 'book as object' (Munari, 1981) and applied his understanding to design books for children. Munari's personal style and unique way of communicating in his picturebooks were strongly shaped by his personal experiences and values (Tanchis and Munari, 1986). His picturebooks also reveal the important feature of unflattened picturebooks —communication through the book-object.

With his picturebooks, he won the Andersen Prize for the 'best author for children' in 1974 and the Lego Prize "for his outstanding contributions to the development of the creativity of children" in 1986 (Lichtenstein, 2000).

In this section, I aim to explore and understand the design thinking behind Munari's 'unflattened picturebooks' by analysing his personal experiences and producing a framework for designing unflattened picturebooks based on his design thinking.

3.1. Bruno Munari's Useless Machines

In 1925, when Munari was 18 years old, he came to Milan and began his artistic career. He found that the innovative ideas of Futurism meshed well with his own artistic ideas at the time. Two years later, he started to follow Filippo Tommaso Marinetti, the founder of Futurism who recognised and appreciated Munari's talent (Antonello, 2012). However, he did not gain worldwide attention until 1933 with the release of his series of sculptures, 'Useless Machines' (Tanchis and Munari, 1986).

The early series of 'Useless Machines' were geometric shapes made from lightweight materials such as paper, thin wooden sticks and silk. They were suspended and delicately balanced together, flowing and changing with the movement of the air surrounding them. These represent the beginning of Munari's exploration of 'kinetic' artworks, following his idea of artworks which are not fixed in space, but which dynamically respond to the environment around them:

it would perhaps be interesting to free these forms from the static nature of a picture and to hang them up in the air, attached to each other in such a way as to live with us in our own surroundings, sensitive to the atmosphere of real life, to the air we breathe (Munari, 2008, Preface).

They also showcased Munari's unique style and ideas of seeking beauty in simplicity, material textures and dynamics—a signature which he would continue to develop. "Certainly, the idea was mine, and yet fish traps and even bamboo can show you the potential in this form." said Munari (Meneguzzo, 1993, p.108).

'Useless Machines' was undoubtedly a significant milestone in his life and art career, which made him the founding father of kinetic art in Italy (Zaffarano, 2012).

How Futurists explored new ways of expression through art had an extraordinary influence on Munari's work. However, Munari absorbed the theories and ideas and combined them with his own knowledge to produce his unique practice and research methods (Menna, 1996). Gradually, his works came to be described as 'Abstract, dynamic, highly transparent, brightly coloured and luminous, autonomous (i.e. resembling nothing but itself), changeable and volatile' (Tanchis and Munari, 1986, p.12). The concept of placing 'the accent on a free and joyful

contemplation and utilisation of the object' (Menna, 1996) indicated by 'Useless Machines' was further adopted and advanced in his other designs.

3.2. The book as an object

Munari's interest in the book is – as usual – multi-faceted and total; it includes a series of interventions which, despite their differences, converge towards a persistent exploration of the limits and the possibilities of this perennial means of communication (Munari and Cerritelli, 2017, p. 31).

Munari started to explore the idea of using the 'book as an object' while he was active in the Futurist movement. For instance, he designed and illustrated 'L'anguria Lirica' (1934), which was printed on pages made of tin. 'It was then that books began to be objects, and to need fewer words to fill the pages' (Lapsus, 1933). While he was working on Marinetti's book 'Il Poema Del Vestito Di Latte' (1937), Munari took the innovation one step further. 'Munari allowed his illustrations to invade page and text, but above all he dared, for the first time, to insert a transparent sheet that, superimposed on the following page, doubled its forms and content' (Tanchis and Munari, 1986, p. 29).

Munari's exploration of the 'book as an object' was not limited to books for adults, and he also produced children's books (Maffei and Munari, 2015). His first independently created children's book was made for his son. As an experienced, creative and well-known designer, he thought it impossible to find any book on the market that was satisfactory for him to give to his five-year-old son. Due to this frustration, Munari decided to create one himself. His goal was to make it suitable for children to understand and appreciate, whilst also help to develop their imagination (Tanchis and Munari, 1986). In 1945, his series of 7 picturebooks—called 'I Libri Munari'—was published. Even though this independent picturebook series was Munari's debut, it performed well commercially and is still being published worldwide today.



Figure liii *Animals For Sale* (Munari, 2004)

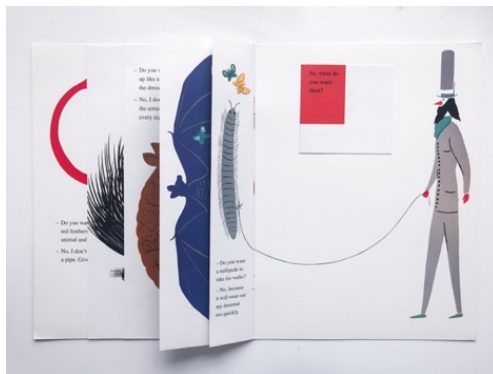


Figure liv *Animals For Sale* (Munari, 2004)

The most distinctive feature of this series is that each book can be played with. In ‘I Libri Munari’, Munari maximised the functions of lift-the-flap techniques and seamlessly integrated them with the storyline. Through opening flaps and interacting with the books, readers could ‘reveal’ the thoughts of animals in ‘Never content’ (1945), ‘open’ a box or wardrobe to discover the surprises within in ‘Toc Toc’ (1945) and ‘Gigi Has Lost His Cap’ (1945) (Figure lv, Figure lvi), and ‘experience’ the visual excitement induced by the graphic changes caused by the overlaying and covering of images on different pages in ‘Animals For Sale’ (1945) (Figure liii, Figure liv). The books provide all of the material required to help grow children’s imagination by letting them play with the book and conveying the idea of the book without telling them directly through speech—instead of using the physical nature of the book to communicate. They are the true examples of ‘unflattened picturebooks’. As Maffei commented, ‘Munari’s book is a direct legacy of the surrealist boîtes; it goes beyond the conventional role of telling stories to become a toy-object, holding surprises’ (Maffei and Munari, 2015, p. 27).



Figure iv *Gigi Has Lost His Cap* (Munari, 1945)



Figure ivi *Gigi Has Lost His Cap* (Munari, 1945)

‘I Libri Munari’ features simple and childlike images. There is plenty of blank space so that readers can pay more attention to the graphic language and visual changes that occur when interacting with the books. The text used in the books is simple and interesting. It mainly serves as guidance and is not overstated, providing the readers with more freedom for their imagination. Rather than reading passively, readers can take the initiative to engage with the experience.

The series also reflects Munari’s educational ideas. He considered play that is based on curiosity and initiative as very important for children’s learning. He assumed the ideal toy or game design for children comes from designers who understand children and consider their needs. It doesn’t require any instruction, allows the child to interact spontaneously with their imagination, and assists the

educational purpose (Munari, 1981). Moreover, the books follow Munari's semi-open style which prevails in his works, and he always gave space for his users to complete his art (Tanchis and Munari, 1986). Even though it was during the post-WWII period, when materials and labour were scarce, the publishing house Mondadori was still willing to offer him support (Maffei and Munari, 2015).

In 1948, when Munari joined the Concrete Art Movement (MAC), they did not have any solid theoretical support. Munari put forward the following statement which later guided the core ideas for MAC: 'artistic objects that will, therefore, be: plastic, coloured, audible, odorous etc., have different weights and be made of different materials, they may be stationary or in motion. This means these total objects will be designed to be looked at, touched, smelled and listened to' (Maffei and Munari, 2015, p. 20). From this it is clear that Munari, who was still greatly influenced by Futurism, regarded the centre of his efforts to be the creation of fun in various types of media and bringing that fun to audiences. Cerritelli commented on Munari's art practice at the MAC stage: 'The aim is to construct the equilibrium of opposing tensions, the analysis of dynamic space and the perturbation of its structural framework; in this sense Munari loves to play with all the elements in the field, maintaining a fluid process of combination of the various instruments' (Munari and Cerritelli, 2017, p. 24).

It was also in this period that he started to create 'Libri illeggibili', which then went on to become one of his most important works. 'Libri illeggibili' is an experimental project that explores the communication possibilities of the material itself. Munari questioned whether the book-object itself could communicate with the reader after the text and pictures were removed from it (Munari, 1981). He committed himself to this limitation, found his way and became limitless. Munari re-examined the book's physical attributes, replaced the ordinary paper page in the book with different textured paper, changed the page size, shape, colour, etc., and created a new way of communication purely through visual and tactile media.

Paper is usually used to support the writing and pictures and not to 'communicate' something ... If the formats are arranged in increasing or decreasing order or alternatively intersected or rhythmically matched together, a rhythmic form of visual information is obtained, since turning the page is an action that takes place over time and hence is part of the visual- temporal rhythm. (Maffei and Munari, 2009, p.23)

Maffei explained that for Munari, ‘the purpose of this experimentation was to use the very material of books as a visual language, after exploring all its literary, philosophical, social, and so forth communication possibilities to the full’ (Maffei and Munari, 2015, p. 23). Munari’s ability to think in this way was derived from his attention to materials and years of research and experimentation. For Munari, the experiment of ‘libri illeggibili’ was not only a way of learning about the book as an object but was also about gaining design inspiration. Through an in-depth analysis of different materials and hands-on experiments, he mastered these methods for his later books. ‘Nella Notte Buia’ and ‘in Nella nebbia di Milano’ are unflattened picturebooks with narratives conveyed through the materiality of the book, and Munari created them during the exploration of ‘libri illeggibili’.

3.3. The Design Thinking of Bruno Munari

Munari created his books with a designer’s mindset. He performed in-depth research of both user and product for every book he designed. He relied on supportive theoretical concepts as he found new ways to communicate between users and the book subject. As a designer, Munari claimed that the design method and process is essential for any design activity. Designers need to know who has used this design method before, how it can be done differently, what problems will be met during the process, etc. The point of these efforts is to avoid making the same mistakes again and to generate new ideas (Munari, 1981). In ‘Da cosa nasce cosa’, Munari concluded his procedures of design are:

1. Problem
2. Problem Definition
3. Problem Components
4. Investigation/Data collection
5. Investigation Rationalisation/Data analysis
6. Creativity
7. Materials & Technologies
8. Experimentation

9. Prototyping
10. Verification
11. Solution

(Munari, 1981)

This method indicates that design is a problem-solving process. After a designer determines the objectives (problems to be solved) of their work, they begin analysis of all potential issues, such as restrictions on materials/media, time, and cost. Upon acknowledging the limitations, they should carry out a complete trial to identify any missed issues. Creation within the constraints leads to the production of a prototype until the best solution is found. Munari claims that the design emerges from the needs of solving the problem, and that solving these design problems can improve the quality of the final product (Munari, 1981). This design theory can be seen as a practical and inspiring framework that designers can use as a to guide to generate new ideas, structure a feasible plan and develop new products.



Figure lvii *I prelibri* (Munari, 1980)

We can take ‘I prelibri’ (Munari, 1980) as an example to explain Munari’s design thinking. It is a series of 12 small (10 x 10 cm) books designed for young children who have not yet begun to learn to read (Figure lvii). The children are meant to both play with and learn from the books, while also establishing their initial

understanding of what a book is and what books can be. In ‘Da cosa nasce cosa’, Munari explained the process of designing ‘I prelibri’. He first pointed out the problem that books are very important, but many people are not interested in reading books. What is the reason for this? He believed this is because most textbooks people read as a child are very boring; thus, people lose interest in reading at early ages. Jean Piaget (1952) suggests that the first years of life are vital to cognitive development; very young children learn about the environment around them through all sensory modalities—not only through sight and hearing, but also through tactile, thermal, material, aural, and olfactory sensations. Therefore, Munari had the idea to design a set of objects that look like books and bring information to the reader through all of these modalities. They would be like the volumes of an encyclopaedia, but with a different type of knowledge to learn from, and be very beneficial for children’s development(Munari, 1981).

Munari’s accumulated experience in graphic design and experimentations on the very material of books as a visual language informed his designing of ‘I prelibri’. He bound the books in different materials—such as paper with holes, fabric, wood, transparent material and sponge sheet. Munari explained that such books can cultivate children’s love of experimentation, as well as their curiosity, mental flexibility, metaphorical thinking and aesthetics. These are the sorts of book that children are willing to get close to, just like Linus’s blanket in ‘Peanuts’. After repeating testing with children in kindergarten, this set of small books which can be easily held and manipulated in the small hands of little children was published. Marnie Campagnaro comments:

With *Prelibri*, Munari set himself a challenge to create books that truly tested the limits of the traditional book, and with them he challenged young children to push past the limits to constantly discover new things. (Campagnaro, 2019)

Munari’s works also demonstrate another important feature—his pursuit of simplicity. Munari states,

It is always a question of clarity, of simplicity. There is much work to do that involves taking away, instead of adding. Taking away the superfluous in order to give exact information, instead of adding to and complicating the information (Tanchis and Munari, 1986, p. 67).

Munari removed excess ‘flashiness’ from his work as he preferred clarity, simplicity and participation in art. He provides a straightforward structure that can be ‘completed’ or ‘decorated’ by the user, in accordance with their own tastes and inclinations to follow one fashion or another. Munari’s design is humanistic and caring, and he always gave space for his users to complete his art through their own experience with it. His ‘unfinished’ design follows the precept of Lao Tzu:

Production without appropriation.

Action without imposition of self.

Development without oppression

(Munari, 1981).

This design philosophy endowed his works with the possibility of increased participation from the reader, offering an augmented experience and enhanced freedom while providing more space for audiences to contemplate and learn. Such design thinking should also be applied to designing unflattened picturebooks, because such books are ‘user-centred’, participatory and broadly experiential, just like what Munari regards a good toy to be.

3.4. Inspiration from Bruno Munari’s methodology

One of the duties of the visual producer will be that of an experimenter, of trying the tools and passing them on the next, along with all the “trade secrets” that assist the process of making (Munari, 1972).

Munari’s creative philosophy was ‘everyone’s art’ (Tanchis and Munari, 1986). As he valued the social significance of creation, he produced artworks that the public could understand and benefit from. Munari’s early work on ‘Useless Machines’ demonstrated his ability and desire to make full use of the interaction between material diversity, dynamic environment and space in order to shape audiences’ tactile and visual experiences. Knowing that children’s cognitive development depends on their experiences, Munari was drawn to children’s books as a mass medium. He used this medium to explore how to apply the idea of a ‘book as an object’ specifically to books that can ‘communicate’ with children and stimulate their imagination through play. His design pursues aesthetics as well as pragmatism.

With extensive knowledge of Asian culture, Munari was also influenced by the Confucianism idea, 'If I listen, I forget. If I see, I remember. If I do, I understand.' For Munari, doing means understanding (Tanchis and Munari, 1986).

When we think about all the things that Munari dealt with, we cannot but sense amazement and admiration for the quality of such a great number of experiences and the elasticity of his thought, always ready to change in order to improve his scope for knowledge (Munari and Cerritelli, 2017, p. 41).

In fact, Munari's 'learning by doing' methodology can be regarded as the basis of creation for any artist, which has also proved what Beard and Wilson said when discussing art and design education—experience plays a fundamental role in creation (Bread and Wilson, 2006). This is because experience is the core of creative activities, analysis and argumentation. The richer the experience is, the more stable and sustainable the other creative activities are. Munari endeavoured to discover and resolve the possibilities and limitations through continuous trial and error in order to improve the novelty of his works. Munari ironically referred to his creative method as 'play with art'.

Munari's children's books are clear examples of Munari extensively and profoundly exploring various media to find novel, creative applications for them. It seemed as if his works showcased his exploration process, and every piece of work shows his artistic pursuit—'a dynamic and "total" art, aiming to engage all the senses' (Hajek, 2012, p. 15).

Munari's son Albert said that when Munari was working, he would never stop asking himself 'how can I do it differently?' (Munari, 2012, p. 165). Munari's method of innovation was not an abstract concept, but a systematic design method. He took the research as the dominating perspective during his creative process, in order to totally understand the need of the user and to clear the problem. From there he found applicable methods and languages suitable for his works.

He also praised 'play with art'; 'Arte = Techné + Asobi' (Art = technique + play)(Lichtenstein, 2000, p. 104). This may sound like it's implying a radically

unstructured approach, but in fact, he advocated freedom with restriction to arouse the infinite creativity in himself:

He avoids populist overtones, but pursues the avowed aim of working so that the majority of free men may liberate their own creativity; a creativity with its own laws that have to be observed since, as Munari's warns by quoting Valéry, the greatest freedom is only born out of the greatest stringency (Tanchis and Munari, 1986, p. 73).

Munari's design thinking can be seen as a form of indirect guidance for unflattened picturebook design. However, artists and designers can only fully understand how the theory works and draw conclusions from it through their own design practice (Dewey, 1980).

3.5. Conclusion: The Use of Constraints in Unflattened Picturebook Design

Munari's design thinking has many similarities with the 'designerly way of thinking' methodology used in this thesis. Cross proposes that a designer must consider design 'in people, in product and in-process' to develop in design, and Munari's method also values the study of existing design and design methods. I have already demonstrated in-depth analysis of design 'in product'. Regarding design 'in people', I have analysed the design method of one of the most representative unflattened picturebook designers, Bruno Munari. I found that he favoured restrictions in designing unflattened picturebooks, using the creativity generated from the process to overcome the restrictions of the book's physical nature. This is also the core problem of designing unflattened picturebooks. It is perhaps no coincidence that during my analysis of unflattened picturebooks, I observed that many creators attach great importance to the use of 'constraints' in their creative works.

I have concluded that innovation on the three narrative attributes of unflattened picturebooks—spatiality, materiality and dynamics—can offer readers a more participatory reading experience than flat-printed books. Also, when bookmakers explore these aspects in new areas of creative space, they may find they also introduce new constraints. However, designers believe that restriction is an

effective tool to reduce the complexity of the problem and make the design process more concrete.

Suzy Lee, the designer of ‘The Border Trilogy’ is an unflattened picturebook designer who has carefully explained the use of constraints in detail. She conveys that while the physical nature of the book may limit the artist’s imagination, it may also help guide their creativity in new directions (Lee, 2018, p.6). The idea of making the ‘Border Trilogy’ books came to her from considering the limitation of using the gutter of the book as a central part of telling the story. She said:

All media have their limitations. For the artist, it is more fascinating to consider working backwards from the final point, using the limits, or going beyond them [...] In that case, the book not only becomes a vessel for information, but a meaningful art form in itself. Upon fine-tuning by the artists, the form starts to create meanings and the story gets lively. The form of the book becomes the potential content (Lee, 2018, p. 93).

Louis Rigaud, the famous author of several pop-up books I analysed previously similarly expressed:

I think that constraints are most often beneficial for creativity. I see it in my own work and during workshops with children, to give myself constraints of forms, colours, sizes or even time helps me to generate ideas. (Rigaud, 2018, unpublished)

Therefore, I hypothesised that the use of constraints is a vital concern during the design process of unflattened picturebooks, and the three narrative aspects can also be the constraints the designer uses to innovate upon.

3.5.1. Decisive Constraints

How do constraints work in design? How can one tell whether they are overused in the design process? From the perspective of the methodology, there are many constraints within the typology design research framework and the concept of creative constraints (Reitman 1964, 1965; Simon 1996, 1973; P.D. Stokes 2009). I found ‘decisive constraints’ to be the most practical and relevant design method for artists during their making process. The two definitional conditions of decisive constraints are:

(1) [Radical Decision-Making:] A voluntarily and intentionally chosen obstruction in the form of one or more creativity constraint/s that

diminish(es) the agent's solution space dramatically. This instalment of a radical self-imposed creativity constraint must to a very large extent go against the agent's own prior (tacit or explicit) knowledge from experience as well as the relevant design community's expectations to what are seen as standard and usual solution alternatives within the domain (Mose Biskjaer and Halskov, 2014, pp. 40–41).

(2) [Creative Turning Points:] Be related, beyond a reasonable doubt, to the final creative outcome of the design process in being of crucial importance to redefining the (new) solution space. Thus, for a creativity constraint to be 'decisive' in the application, it must be conducive to creative performance and, in the form of a creative turning point in the process, lead to the attainment of an original, concrete solution (a final design), not merely a dead end (Mose Biskjaer and Halskov, 2014, p. 44) (Figure lviii).

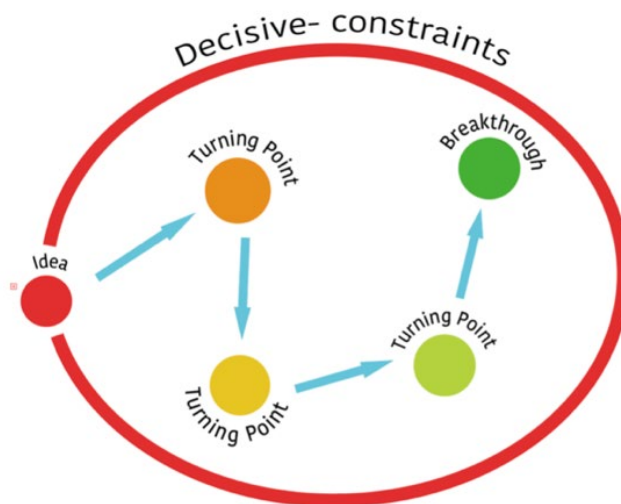


Figure lviii The schematic of how decisive constraints works

'Decisive constraints' also emphasise:

this level of constrainedness cannot be universally assessed. It relies on the agent's individual domain experience and (tacit and explicit) knowledge. The vital part as stated in definitional condition 1 is that the creative agent, the designer, pushes (him)herself to a point where there are no longer any immediate standard solutions at his/her disposal (Mose Biskjaer and Halskov, 2014, p. 44)

'Decisive constraints' appear to provide a design tool for understanding how to use limitations to stimulate creativity, how to determine whether constraints are applicable to the design project and how to produce the ideal result within the scope of the designer's ability. First of all, agents (designers) should propose

some radical and challenging constraints that have not been implemented before, but the requirements of these restrictions should be based on designers' own experience, be related to the design and be reasonably implementable. The plan should not be a vague sentiment or unrealistic direction. Second, the designer should test whether the input constraints can contribute to the generation of effective and original solutions in practice—finding the turning point and helping the overall design.

In my own picturebook work, I have never attempted using the book itself as part of the narrative, and I can hardly predict what will happen in the creation. However, the direction of my looming attempt is still based on my previous children's book creation experience; using traditional paintings and pictures to express the story, with the book itself becoming part of the story expression. Therefore, I assume this method would be well-suited for a practitioner like me. In the next section, I will present my own process of designing unflattened picturebooks based on the methodology framework of 'decisive constraints'. I will demonstrate how I use it as an analytical tool for my unflattened picturebook design and use self-imposed restriction to carry out the creation.

Chapter 4. Unflattened design: research in practice

Cross suggests that design knowledge resides in people (i.e. designers), in design processes and in the products themselves (Cross, 1999). After learning about unflattened design through analysing design ‘in product’, I concluded the three narrative attributes of unflattened picturebooks are: spatiality, materiality and dynamics. From the case studies of unflattened picturebooks, I found they offer new ways of reading books and enhancing the reader’s engagement with the plot, beyond that of a flat-printed book. ‘In people’ implies learning from other designers. My in-depth analysis of one of the most popular unflattened picturebook designers, Bruno Munari, allowed me to discover his design concept of ‘everyone’s art’ and his two ‘paths’ of creative methods. In his experimental path, Munari used ‘decisive constraints’; in his didactic path, he used problem-solving design methods. It is notable that interviews with other designers also suggest restriction as an effective tool for designing unflattened picturebooks.

This chapter is my reflective practice of using the theory of design ‘in process’ to improve my knowledge and thereby fully understand the theory I have discovered through studying design ‘in people’ and ‘in product’. Following Schön’s ‘reflection-in-action’ concept, the reflective design process is a critical way to show my understanding and to generate new knowledge rather than being about creating a final artwork.

4.1. The use of decisive constraints in designing an unflattened picturebook: ‘Blueberry Pie’

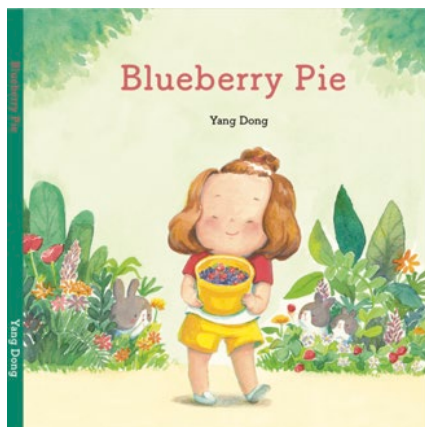


Figure lix The cover of the conventional version, *Blueberry Pie*

One of the major practice elements of this thesis is to translate the original version of my book ‘Blueberry Pie’(Figure lix) into an unflattened version while employing ‘decisive constraints’ (Mose Biskjaer and Halskov, 2014). All of my criteria meet the conditions of ‘decisive constraints’. I had no experience of making unflattened picturebooks using the three-narrative traits of unflattened picturebooks before this research, this was a new and radical constraint for me. Yet it was a self-imposed constraint that I wanted to employ and was not unrealistic, as I am an experienced picturebook maker looking to explore a new creative space by using this constraint. This could be seen as following Munari’s experimental path. Therefore, this reimagining of the original book was conceived as a way to explore the advantages of using decisive constraints within the context of making an unflattened picturebook, from the initial design to overcoming obstacles and finally to the finished book. Furthermore, working from a story that began as a flat printed picturebook can help me understand the differences between making a conventional picturebook and designing an unflattened picturebook. (For example, the differences of the processes and the way of thinking during these processes.) In this section, I hope to depict my process step by step to show my understanding through practice, which follows Schön’s ‘reflection-in/on action’ methodology.

4.1.1. A radical self-imposed creativity constraint

To start with, I began analysing the plot to anchor which narrative aspects of unflattened books (spatiality, materiality and dynamics) the story should reflect as an unflattened version, so that I could set it as the radical constraint to innovate on. The story is about a little girl called Maggie who wants to pick some blueberries in the woods to make the eponymous blueberry pie, but she is distracted by some other things (strawberries, a butterfly and flowers) soon after she picks the blueberries. In the end, she comes home with nothing but some little friendly helpers. Here, the main storyline can be summarised as a journey: the protagonist leaves home at dawn and does not arrive back home until the sun set. If we treat a story as a series of linked scenes, which are the basic units of fiction (Bell, 2004), then the scenes here change as the girl travels from home to the forest and back again in this journey. Since a journey implies time and space, I first anchored the ‘spatiality’. As I explained in Chapter 2, ‘spatiality’ employs the space of the book-object to represent the fictional space. Hence, I decided to employ the physical space of the book-object to represent the space in the story. As this was my first time creating an unflattened picturebook with ‘spatiality’, I didn't have any practical knowledge. Therefore, all my early decisions met the first condition of using decisive constraints: radical decision-making.

However, the conventional picturebook-making method which starts from drawing a storyboard still dominated my thought process. Therefore, I began by drawing a storyboard, and then I noted where I could add some movable elements. The first dummy book I created was a hybrid between a pop-up book and an illustrated picturebook which has some movable parts in it. When I examined it closely, all the moving parts I added were unnecessary (Figure lx, Figure lxi, Figure lxii). They were simply moving elements in the drawing space which didn't influence or narrate the story. The illustrations were still responsible for the narrative in this version. At that time, I couldn't think ‘outside the box’.



Figure ix Mock-up 1 of *Blueberry Pie*



Figure lxi Mock-up 2 of *Blueberry Pie*



Figure lxii Mock-up 3 of *Blueberry Pie*

After talking with one of my supervisors, I recognised the problem. I needed to be more experimental and focus on using the constraint which was to use the space in the book-object to present the space in the story and offer an immersive reading experience to the reader. I needed to better focus on creating an experience for the reader and pay more attention to how the book-object is used. I decided to remove

the little girl character Maggie and invite the reader to be the protagonist instead. This made my constraints more radical without being too extreme to adhere to while also following the original story. I started to understand these two versions and focus on different ways of expression. The creation process of the unflattened picturebook would deviate significantly from creating the original version that represented the story through concrete pictures.

4.2. Creative action under restrictions

As Margaret A. Boden (2003) explains: ‘Constraints on thinking do not merely constrain, but also make certain thoughts—certain mental structures—possible’ (p. 58). After I started to pay more attention to the constraints, it helped me focus on a path to completion.

First off, I looked at the methods of presenting ‘spatiality’ used in the unflattened picturebooks I studied. I set three methods to experiment with on the spatiality of the book-object: using flaps, using transparent or translucent materials to replace the ordinary paper, and using die-cut pages. Those methods allow the illustration on the recto (right) and verso (left), as well as back and front pages of either, to interact with each other when turning the page. The layered pages create a physical space and depth within the book-object. Also, the incomplete images offer a feeling of anticipation and surprise to the reader. The action of turning the page can be more engaging and reflect the other aspects innovated upon in unflattened picturebooks—those of ‘dynamics’ and ‘materiality’.

Komagata declares:

Turning the page makes it possible to construct things, to trigger surprises moving to the next page, stimulating the reader’s interest. Technically there are die cutting, folding, pop-up technique, etc. (*Illustrators annual*, 2017))

I revisited the story again. There are four key actions of the protagonist during the journey: picking blueberries, finding strawberries, chasing the butterfly and picking flowers one after another. The later actions made her forget her basket containing the blueberries, the very reason she came to the woods in the first

place. I wanted the reader to experience these actions through the book-object. I decided to insert flaps first, as this mechanism can easily achieve the required masking and unveiling experience, and it occurs in the physical space. As I expected, the experiment with flaps worked very well to simulate finding the blueberries and the strawberries (Figure lxiii). Using leaf-shaped flaps to cover the berries and inviting the reader to reveal them allows the reader to believe they found the blueberries themselves. The basket full of blueberries on the next page can guide the reader to realize the blueberries are their reward, as they were responsible for their picking through the page-turning process.



Figure lxiii Mock-up 4 of *Blueberry Pie*

Next, I worked on the butterfly and flower scenes. As these are not unveiling experiences, the flaps were not suited to represent these events. I needed to find some similarity between a flying butterfly and something I could present in the book. While seeking inspiration from other paper arts, I came across a children's handcraft. They used two pieces of paper in the shape of butterfly wings which were stuck together to simulate the flying butterfly. I realised I could draw two mirrored pictures on two pages to represent the butterfly's wings; they would flap as the pages turned, creating the interesting effect of a butterfly flapping its wings in the space. However, when I added the butterfly with the lift-the-flaps scenes, the consistency of the paper mechanisms and continuity of the visual narrative collapsed. They became a mismatched set of dispersed active devices.

Maintaining integrity and consistency throughout the aesthetic of a book is a basic rule of book design (Drucker, 2004). Choosing the materials and mechanisms that

make up the book is important to treating a book as a unified object. If the content doesn't require different techniques or materials, there is a need to keep a unified style. Therefore, I needed to find other mechanisms which would ensure the unity of the whole book while presenting the linear storyline.

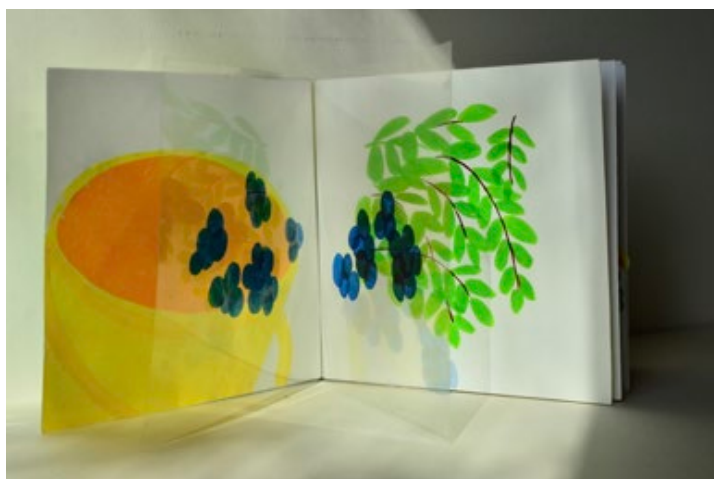


Figure lxiv Mock-up 5 of *Blueberry Pie*

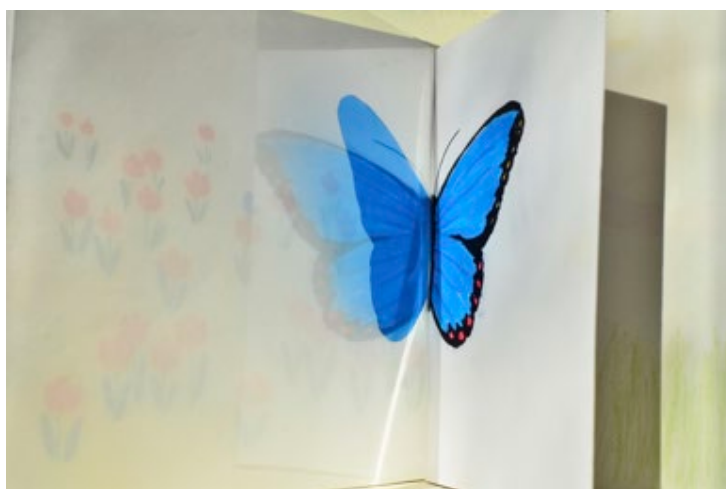


Figure lxv Mock-up 6 of *Blueberry Pie*

This is when I turned to the second technique of using transparent sheets. I drew some bushes on the recto page and a basket on the verso page. Between these two pages, I attached a transparent sheet (Figure lxiv). When turning the transparent sheet, the blueberries 'fell' into the basket, so they looked as if they were being picked by the reader. The translucent wings brought a vivid visual effect to the butterfly (Figure lxv). However, it didn't work in other scenes. Along the journey,

there are three little rabbits who had followed the protagonist from the very beginning, took care of the basket full of blueberries and brought them back to the protagonist's home. Using the transparent sheets was not helpful for making the rabbits less noticeable. In contrast, the transparent sheet made the drawings more intensive. This technique was thus problematic for ensuring the unity of the whole book.

It was not easy to reach the turning point at which I would begin to make positive progress, but even before I did, I recognised that I benefited from the methodology of decisive constraints. The constraints helped me to narrow down the methods available to me so that I could be more focused on the live possibilities under the constraints. The rule of finding the turning point allowed me to identify the problems I was facing and made my experimentation more efficient. I then decided to move on to my last technique option, using cut-outs.

4.3. Turning point

All of the previous experiments trained me to pay more attention to the book-object itself, gradually changing the way in which I worked so I could rely less on the concrete pictures to present the story. I thought of Munari and Komagata's books and encouraged myself to be more open. They are both skilled at imposing the limitation of only using paper to explore the possibility of communicating through pages in books. In his interview, Komagata declared the 'secret' of his design method is limitation (IlustraTour, 2014). Although only using paper seems to be limited, Munari and Komagata realised the diversity of the paper itself. They have explored a more restricted creative space and used this 'smaller' space to stimulate their imagination and bring readers a combination of tactile and visual reading. Even though the restrictions they set are similar, and both employ the spatiality and materiality of the book to express the story, the styles of their work are unique; Komagata's works are subtle and elegant, like Japanese gardens, creating a visual hierarchy (Figure lxvi, Figure lxvii, Figure lxviii). Munari's works are full of vitality and dynamism. Munari and Komagata both employ the materiality of the paper to serve the content, but the use of abstract elements such as texture, colour, light, shape and composition is different between the

picturebook makers. These elements greatly influence the expression of the stories and reflect the subjects and emotions of the books. ‘When we look at a picture we perceive the ingredients and their organizations as symbols referring to actual objects and (if we know how) to abstract notions’ (Doonan, 1993, p. 15). Those basic compositions play an important storytelling role in all kinds of picturebooks; this is their function as art objects (Doonan, 1993).



Figure lxvi *A place where stars rest* (Komagata, 2004)



Figure lxvii *A place where stars rest* (Komagata, 2004)



Figure lxviii *A place where stars rest* (Komagata, 2004)

Inspired by this, I took the constraint further by only using cut-outs on coloured paper to present the story content, as this would reduce complexity and focus more on the book-object. Colours play an important role as ‘visual grammar’ (Hermawan, 2011) by conveying abstract feelings and expressing subjective meanings. Clair Painter declares that colours establish ‘ambience’ (Painter, 2008). For example, red evokes fire and expresses a warm feeling, and blue suggests coldness. Painter believes the three features for creating atmosphere are: vibrancy (saturation and value), warmth (provided by hue), and familiarity (expressed by realistically and unrealistically coloured objects). What I took from this insight was that the ‘familiarity’ of the colour would be vital to create my unflattened book, because realistic colours and shapes are the only visual information for communicating with the readers here. Fortunately, the story is full of realistic objects such as blueberries, strawberries and a forest. Another familiar element is the changing of time. I realised the layered cut-out pages could create a physical space in the book-object which could be used to present the space in the story. Therefore, I started to prepare some coloured paper which would be fitting to the elements in the story.



Figure Ixix Laser-cut test of *Blueberry Pie*

I started my experiment from the beginning of the story. I layered green paper cut to form trees and bushes to simulate the forest; these formed a tunnel through the book, revealing and unveiling different aspects that invited the reader in (Figure

lxix). I cut some circles on the green paper and layered it onto the purple paper sheet, so I could see 'blueberries' through the cut-outs. I made red strawberries and butterflies with the same method. Putting all of those scenes together solved the previous problem of disunity, and the entire visualisation became harmonious. I settled on using a bright green colour for the forest. Initially, I chose a bright red colour for the door to produce a sharp contrast between the inside and outside 'world'. However, the red door was too dramatic and could stop the reader from moving forward. I instead tried a dark blue colour to reduce the impact of the door itself and make the green of the forest the most striking part of the book visible on that page. Now it felt like the reader was leaving the house and taking the action of moving through the door. I also folded the door shape flap to simulate opening the door and entering the forest. The layered cut out images presented the space very well, which suited the broad idea of a 'journey', and worked for most of the individual scenes. Even the rabbits hid well in the coloured paper. This is when I realised I had reached my turning point in my decisive constraints.

I then needed to know what binding method I should use. I needed to solve this problem before I made more images because the binding method influences the page number as well as the content. Most conventional picturebooks use glued thread bindings, commonly with 32 or 40 pages. Unflattened picturebooks with special print techniques such as insert flaps and die-cuts have far fewer pages: most pop-up books have only six spreads. But, at this stage, I still couldn't decide how many pages I would eventually need. I tried to find other feasible binding methods and remembered Munari's book *Libro illeggibile* 'MN 1' (2000), which also uses coloured paper as the visual language to express the content. He used a string to bind the pages together, which is similar to a saddle stitch binding method. Saddle stitching is a very popular bookbinding method in which folded sheets are gathered together, one inside another and then stapled through the centrefold. Adopting this binding method, the colour of the pages will repeat in the reverse order, like a palindrome (Figure lxx). This mirrors the structure of the story, because the protagonist leaves on a journey and then retraces her steps back. Hence, I decided to use this kind of binding method. Saddle stitching requires the book's page count to be in multiples of four, so I started with eight colours and tried to adjust the colours to express the correct visual information.



Figure lxx Binding demonstration

I had many layers to contend with, and hand-cutting was not an easy way to align one page with the next, being that the next page could not be visualised while cutting the first. This is why I started to design the shape and plan the layers in Adobe Illustrator (Ai). I could now easily see where I wanted to have the cut-outs and where I wanted to block. I also had access to a laser cutter, so I didn't need to worry that I wouldn't get the details of my cut-outs right. After constantly trying to harmonise the colour, the cut-out shape and the layered images, I gradually made all the images and linked all the scenes together physically. However, I found that they seemed like a pile of similar pages. They were missing the visual rhythm. I decided to cut them and make them into a physical book first, and then see what the physical book would look like. This is because for unflattened picturebooks, the page-turning also plays an important part in delivering the narration. The experience was indeed different when manipulating the real book, and some new problems emerged.

When I layered all the laser cut images together, I realised there were too many cut-outs which were very distracting and made it hard to follow the narrative in the book. Most of the cuts stayed on the same part of the page (because I wanted to cover some of the cut-outs on the next page), and after the pages were layered

and aligned, it even showed rhythm—but it was too repetitive. The visual rhythm in a picturebook is vital. In an interview, Arthur Levine said:

I think it has to do with the flow of the book and design interest. It would certainly be boring if a book were all pictures of even size. What you have here [showing us an example] is interesting visually and plays with visual rhythm [...] What you're balancing is what the artist has found interesting to illustrate, combined with the need to have a visually interesting and varied layout. There's a rhythm going on. (Marantz and Marantz, 1997)

How to solve this problem? Bearing these questions in mind, I looked back to the published unflattened picturebooks. I noticed that many die-cut books insert an opaque page after every few cut-out pages. In his 'Nous!' (2016), Hector Dexet inserted an opaque page every other two cut-out pages. Similarly, Lucie Félix's 'Apples and Robins' (2016) used opaque pages to change the visual rhythm, even though she used many cut-outs. This method of inserting an opaque page can pace the book while also minimising the difficulty of planning how many pages will interact together at the same time.

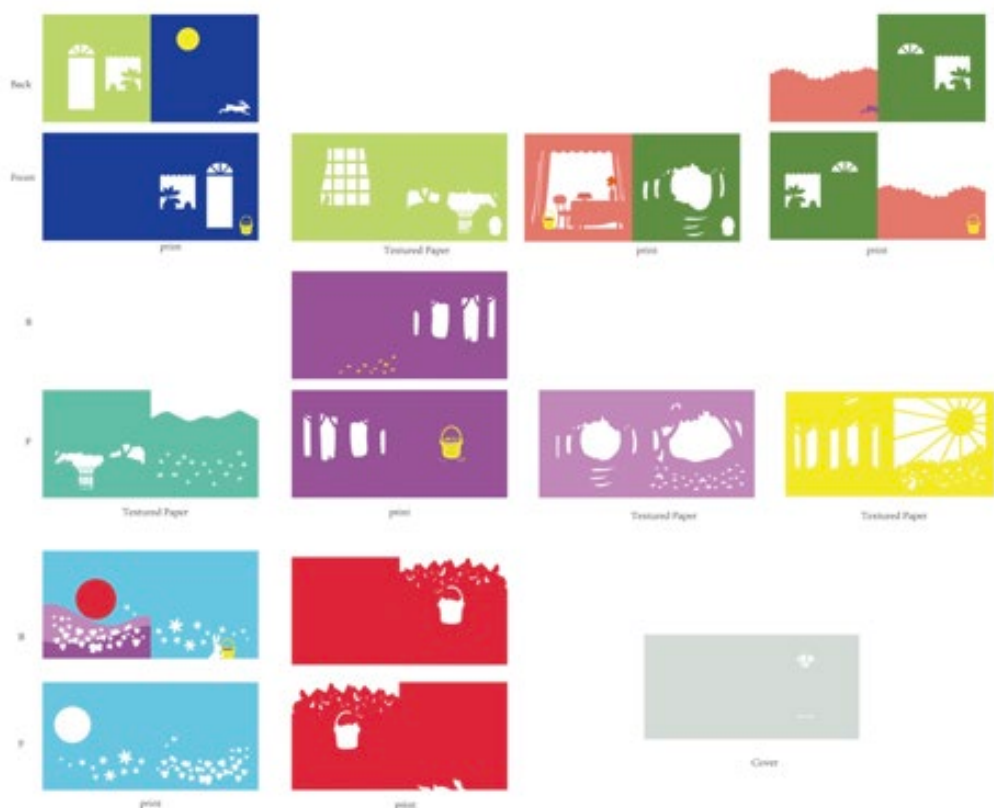


Figure lxxi The book layout of unflattened version, *Blueberry Pie*



Figure lxxii The unflattened version of *Blueberry Pie*, page 1-4.



Figure lxxiii The unflattened version of *Blueberry Pie*, page 30-33 and page 36-39

As my story follows the typical three-act structure (Paul, 2009), I supposed I could use the opaque paper to divide the book into three parts, distinguishing the turning points of the story visually. The first act is picking the blueberries. Second

act: the strawberry, butterflies and flowers distraction. The third act, going back home. Although there was still much planning of the images and the pages left to do, the opaque layer worked well for changing the visual rhythm, and also created the sense of mystery to nudge the reader to reveal the page. The final work ended up consisting of ten colours, which is 20 pages (Figure lxxi, Figure lxxii, Figure lxxiii). Using ‘decisive constraints’ (Mose Biskjaer and Halskov, 2014), I successfully made an unflattened picturebook that delivers the narrative using the book-object.

4.4. Conclusion

My practice supported my hypothesis —using constraints has been an efficient design method to produce unflattened picturebooks and the three narrative aspects—spatiality, materiality and dynamics—can be used as constraints to innovate within. ‘Decisive-constraints’ offers a tool for the book designer when making unflattened picturebooks, which can help reduce the complexity of the problem and make the creative path more concrete.

Classic picturebooks are almost entirely narrative-led, and every element is conscripted to serve that narrative (Nodelman, 1989, pp. 23–23). Unflattened picturebooks are, in contrast, experience-led, and using the book-object to achieve the desired experience is the primary concern. Furthermore, though the innovative features impose restrictions on the design of the books, they also accentuate the uniqueness of such books. However, the limitation of the physical form creates more impediments to delivering the narrative than what is found in conventional illustrated picturebooks. The narrative sometimes needs to be simplified to accommodate the physical form. Moreover, in order to retain the integrity and aesthetic value of the book, the methods employed to present the participatory experience need to be unified (Figure lxxiv). Whether designing conventional picturebooks or unflattened picturebooks, picturebook creation is a constant editing and refining process.

	Making standard picturebooks	Designing unflattened picturebooks
The mode of thinking	Narrative-led	User experience-led
The ways of design	Balancing the relationship between words and pictures	Balancing the relationship between words, pictures, and the book-object (design)
The traits of narrative elements	A picture is worth a thousand words	A book-object has its limitations due to its physical nature
Required skills	Visual narrative, design	Visual narrative, design and crafting

Figure lxxiv Results from *Blueberry Pie*

This project began with the idea of turning a conventional picturebook into an unflattened picturebook. Therefore, I was struggling with trying not to deviate too much from the original story; I wanted to design a closely corresponding participatory experience. This reduced the flexibility of my creation. Moreover, due to my excessive consideration of the use of the book-object, this experiment did not balance the relationship between images, form and story as a normal picturebook design process would. Therefore, in the next experiment, I changed the design strategy. Instead of starting with a complete story, I allowed the creative activity to occur spontaneously. The story and form developed together, which integrated with the illustrations themselves.

Chapter 5. Investigating the Relationship Between Illustration and Unflattened Design in Designing ‘Once Upon A Hole’

Creating the unflattened ‘Blueberry Pie’ was a process of broadening and deepening my knowledge and accumulated experience, skills and theories. This project enabled me to understand the idea of the ‘book as an object’ more fully and to gradually finalise the design methodology for unflattened picturebooks. After ‘Blueberry Pie’, my ideas of picturebook making have changed substantially. The most significant change is that I have started to care more about integrated design. In the past, I mainly focused on the storyline, but I now think more about how to design the entire book in order to create certain experiences for readers.

‘Once Upon A Hole’ is an advanced practice based on my previous studies to showcase how to apply unflattened design methods to make ‘conventional’ unflattened picturebooks (INIS Reference Series No. 1 INIS: Guide to Bibliographic Description, 2009, p. 17). ‘Blueberry Pie’ is a more experimental project that does not take much account of the practical aspects of publishing. For example, most children's unflattened picturebooks still combine pictures with unflattened design to present the story and make it easier for children to read. Therefore, for ‘Once Upon A Hole’ I have discussed and finalised the relationship between text, images and unflattened design in picturebooks. On one hand, ‘Once Upon A Hole’ has verified my previous practice and theories. On the other hand, it has opened my eyes to new theories that I’ve never taken account of before.

5.1. Start from initial chaos

‘Blueberry Pie’ was created based on the conventional method, i.e., by structuring the entire story as completely as possible before starting to work on the pictures (for this book, ‘pictures’ refers to drawing pictures and unflattened design). However, as I previously concluded, this greatly reduced the scope for design, and impaired the role that unflattened design could have played in the narrative.

Therefore, this time I decided to carry out a paralleled strategy which considers design/pictures and storyline at the same time.



Figure lxxv *Mysterious Hole* (Komagata, 2018)

As the saying goes, we all have to start somewhere. ‘Once Upon A Hole’ was inspired by Komagata’s book, ‘Mysterious Hole’ (2018), which I first saw at the Bologna Children’s Book Fair in 2019 (Figure lxxv). There are actual holes in ‘Mysterious Hole’ which are part of the scenes. Readers were impressed by the story, which unfolds from the holes and the conflicts between human beings and the animals in and out of the holes. By flipping the pages, the holes create multiple layers, all of which are important parts of the narrative. Readers can perceive and feel the depth in a real tangible way, so they can be immersed into the story world. This was an adequate unflattened picturebook. After the book fair, I did not intentionally reflect on this book until a day when I was looking for inspiration for my new project. While I was ‘playing’, I grabbed a piece of paper and folded it in half, creating the appearance of a page spread of a book. Upon closing, it would be two pages overlapping one another. I dug a hole on the first ‘page’, which reminded me of the book by Komagata. I started to imagine where this hole would lead me. My imagination was sparked from here in a playful way, which prompted a new round of creation. Just like for many designers, the project started from ‘playing’.



Figure lxxvi Mock-up 1 of *Once upon a hole*

To me, this hole resembled a lot of things. Horizontally, it looked like the opening of a drainage pipe, or the rim of a cup that was knocked over. Vertically, it reminded me of the entrance of the underground tunnel in the game Super Mario Bros. For personal reasons, I would like to have a rabbit character for each of my picturebooks, so I decided to make it a rabbit hole. Thus I drew a rabbit (Rabbit 1) on the next page, who seemed to be looking out of the hole. ‘Is he waiting for something?’, from here, the constraints started to work for me as a bout of imagination sparked in my mind. Just like Brandon Rodriguez said in ‘The Power of Creative Constraints’ (2017), ‘constraints aren’t the boundaries of creativity but the foundation of it.’ I continued to fill in the details—he might be waiting for his friends. I drew another rabbit (Rabbit 2) on the front page who was looking into the hole, so I now had two rabbits looking into each other’s faces (Figure lxxvi). ‘What are they going to do? Right! They’re going on an adventure.’ Thinking of ‘adventure’ was closely related to my personal experiences. I was quite a naughty girl when I was young; I always wanted to escape from parents and teachers’ supervision to explore the world. My family thought I was wild, just like a boy. I actually hoped that I was a boy, especially growing up in a traditional Chinese family where the concept of ‘men are superior to women’ was deeply rooted. Thus, the characters in this book are the male version of myself and my cousins. My adventurous exploration is still happening today. As Martin Salisbury said, ‘It is important, though, that your ideas originated from within you, the author’ (2004, p. 76). I believe that behind every story, one can have a glimpse at the teller’s own life experiences. These are no more than my scattered thoughts, which are not the actual beginning of the story, but this contextualises the way I

wanted to work on this project. Unflattened design and story were proceeding hand in hand.



Figure lxxvii Mock-up 1 of *Once upon a hole*

I turned the initial page with the hole and ‘entered the hole’ to the page spread. Rabbit 1 in the hole appeared on the right side of the paper. I had originally drawn him bodiless, as it was only his face poking out of the hole. I now drew his body; this is how I discovered he was squatting there. For reasons of perspective, the hole had been above Rabbit 1 before I turned the page. Now the hole was on the left (Figure lxxvii), and Rabbit 2—who was out of the hole—disappeared. Although it was only a simple flipping action, it could potentially cause changes of time and space in the story. At this stage, this mock-up did not explain what had caused the changes, so obviously, the storyline lacked visual coherence. This incoherence triggered my interest. I concluded that to achieve reasonable coherence in unflattened picturebooks, it is necessary to integrate unflattened design and narrative pictures.



Figure lxxviii Mock-up 2 of *Once upon a hole*

To solve the coherence issue, I made a new mock-up in which the hole in the front page was higher on the page, and Rabbit 2 (the one looking into the hole at the entrance) was drawn on the left half of the page spread. The page spread showed that one rabbit had just jumped into the hole, while the other one was waiting at the bottom. Their locations gave the characters narrative coherence. However, from the front page, only one rabbit waiting at the entrance of the hole was visible. Compared with the previous mock-up, there was less narrative enticement. I needed to help readers look forward to what was going to happen in the next pages. To achieve this, I drew another rabbit (Rabbit 3) on the right half of the page spread, part of whom can be seen through the hole from the front page (Figure lxxviii). Looking through the hole now gave readers a taste of what would happen next.



Figure lxxix Mock-up 2 of *Once upon a hole*

Turning to the double-page spread, it revealed three rabbits. This could confuse readers—where does this third rabbit come from? To make it logical, I drew another tunnel behind him, as if the third were running out of it. In this way, from the first page of the mock-up, one would see one rabbit waiting at the entrance and another (Rabbit 3) who had just jumped into the hole. Turning the page, readers would find out that Rabbit 3 was actually another rabbit coming in from another tunnel, and Rabbit 2 is the one just jumping in the hole (Figure lxxix). The conformal effect is interesting, which can add depth to the story and create a sense of surprise and intrigue. Although I was only pondering over the possible relationship between the narrative pictures and unflattened design with one piece of paper, I came to understand the core effect of cut-out design, which sometimes enables multiple pages to share the same pictures and thus bring about more surprises and fun to readers.

With the draft in my hand, I continued my imaginary journey. After the rabbits met each other, they would continue walking ahead, as they wanted to see what secrets awaited in other holes. I cut out another hole beside Rabbit 1 to make an entrance for the next adventure. I turned over this page to see this hole from the bottom page; the hole at the back overlapped with the first half of the page spread, but it happened to be spotlighting empty space. To build some connection between the pictures on the bottom page and the page spread, I drew another rabbit (Rabbit 4) on the left half, who would be looking out of the hole if you checked from the bottom. Now I had four rabbits in my story. I had not yet decided whether I needed so many rabbits in my story, and I was aware that at this stage, all the experiments were random in nature. But I determined that the holes would be used for guiding the movement of the rabbits through space, and so the unflattened design should innovate on the spatiality of the book-object. The main objective was to explore the relationship between cut-out design and pictures, as well as to discover more possibilities through practice.

In order to focus on enhancing the space-linking role that holes play in this book, I decided to ‘subtract’—to exclude the factors that may be confusing in combining cut-out design with the book. First, I gave up on using specific characters because I would have to consider their actions, expressions, and so on,

which could affect my judgement on the core designs. Therefore, I simplified the rabbits, holes and tunnels into geometric graphics (Figure lxxx). The four rabbits were replaced by a circle, a square, a triangle and an oval respectively. The purpose of simplifying them into the shapes was to enable me to establish the connection for the holes throughout the book. This method worked very well. I quickly sketched several ways for the holes to connect with each other. I also worked out a diagram about how to let these ‘shapes’ cross through the holes. By applying simple shapes to unflattened design in order to choose the main designing method, and then adding complexity and details to the pictures afterwards, I was able to extract the essence of the necessary information to achieve my objective at this stage. In addition, when arranging the order for the shapes to pass through the holes, I subconsciously gave them characters. For instance, the triangle was always the first while the circle was the last. The square and oval were in the middle, following by the triangle to support it.

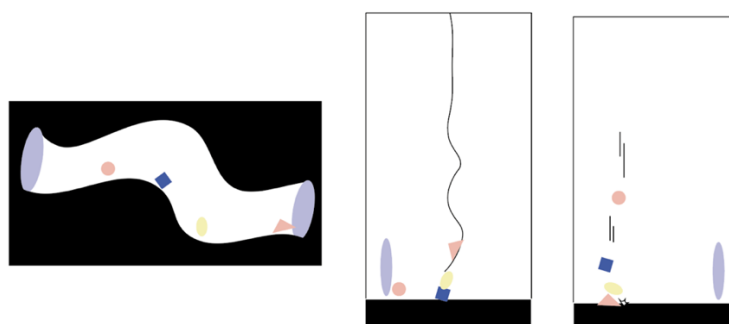


Figure lxxx Test in Adobe Illustrator

5.2. Editing and refining the story

During the stage of simplifying the characters, I gradually realised I didn’t actually need four characters. Two of them had identical roles, so one could be removed. Only three were needed, each of which brought a different mentality to the adventure. They were: Rabbit A, who was passionate about the journey and eager to explore; Rabbit B, who supported and followed Rabbit A; and Rabbit C, who always failed to catch up with the other two—or who joined the adventure not on purpose, but by accident. In this way, each character would have their own

strong personality, each of which would play important roles in the story. This storyline became clearer as I designed the holes. I set the goal for their adventure as exploring the underground animal world. The geometric graphics I had used as their initial character design while mapping out the connecting holes informed some of their respective geometric features. Rabbit A's body was triangle shaped, which looked clever and agile. Rabbit B was tall and vertical, like an oval. Rabbit C was round.

As the story took shape, I started to further determine what tunnels they would pass through. I selected some common underground animals for them to encounter along the way—moles, snakes, bears, ground squirrels and armadillos. With them in mind, I started to draw the draft storyboard in the conventional form, which was then used as a reference to check against my ideas and clarify the storyline. Storyboarding is of great significance in picturebook design. It serves as a blueprint from which the designer can plan the number of pages and their shapes, design the scenes and plots, relate texts with pictures, and provide an overview to better see whether the storyline is logical and organised properly.



Figure lxxxi Book dummy 1

While working on the storyboard, I anthropomorphised the animals to add more fun to the story and set up the scenes by considering their specific characters. For instance, moles are born with poor eyesight, so I set up a scene where a hole was used by the moles to have an eye examination. I decided to let the snakes curl up in sleep, as they naturally hibernate (Figure lxxxi). Plus, if they were awake, it would be hard for the story to further unfold, as they would obviously pose a fatal

danger to the rabbits. However, to add more thrill to the story, I also came up with an alternative option whereby a snake could slither into the bear hole, and with the squirrels' help, the rabbits quickly escape. Then the rabbits come to the armadillo hole, where they collected a lot of armour. In the end, to add even more ups and downs to the storyline, I had them be blown away to a black hole leading to another world, perhaps like a promised land. This would be the climax of the story. I wasn't entirely sure that it could be an interesting story, but at the storyboard stage, the main goal was to brainstorm and clarify ideas. I was aware that the story needed to be further polished and improved, but at least through the storyboard experiment, my focus was on unflattened design. During the time I was working on each of the scenes, I was contemplating the final locations of the holes and how the rabbits would pass through them. The other elements were planned based on these findings. Thanks to the previous prototype, the draft version did not take me long to finish.



Figure lxxxii Book dummy 1

From here, I turned myself into an outsider to review the storyboard in the most objective manner possible. Yes, the draft was still far from perfect. The story consisted of the protagonists simply crossing through the holes. The pictures were evenly composed and when reading them, lacked rhythm in visual flow. Upon realising this, I started to re-design the storyline. This time, the story was that the rabbits got lost and crossed through the holes one by one. I also removed some animals and designed an underground reservoir to highlight the differences between scenes and add a sense of rhythm to the story. In the end, after all sorts of trouble, they went back to the rabbit hole safe and sound. Based on this idea, I

worked out another storyboard, although this one did not seem right either when I reviewed it upon completion. I discovered that the major issue with the project was that although these holes connect the fictional space of the story in the physical book space, they do not provide readers with the opportunity to participate in the story (Figure lxxxii). Cut-out design was not absolutely necessary; as conceived at this point, drawing the holes as imagery would have worked just as well. However, it's crucial that the unflattened design should bring readers a tangible participatory experience.

5.3. Turning point

Upon realising this, I went back to think about what kind of experience I wanted to bring to the reader with the holes. In the initial mock-up, I was trying to make use of the overlapping nature of book pages in combination with cut-outs to create hidden pictures which can evoke surprise upon reading. There were many cases using the same method. For example, 'Shark in the Park !' (Sharratt, 2007) presents 'camouflage' by using cut-outs, and offered readers 'unpredictable' experiences while they flip through the book pages; the images on the next page that one could glimpse in obscured form from the hole hinted that there was about to be a shark, but after you turned over the page, you would find out the shape was not part of a shark but instead something safe. It's part of the information one collects when seeing that the previous page resembles some dangerous elements due to a visual parallax. The 'camouflage' effect was what I originally discovered in my first mock-up. This design method integrates the core features of a book acting as both a physical entity and content presenter, which meet the requirements of the unflattened design. Therefore, I decided to further explore this design path. This decision was like the turning point of decisive constraints, which greatly drove this project forward and made it clearer.

This project was aimed at exploring how to apply unflattened design to the creation of conventional 32-page picturebooks to achieve novel vision and reading experiences. Therefore, I started to design based on the standard of 32-page picturebooks while at the same time considering the content on the endpaper and the cover. I rearranged the story. It started from the endpaper where Rabbit B

was walking towards the readers in the underground tunnel to join Rabbit C at the title page. They would go to Rabbit A together to celebrate his ‘coming of age’ and go for an adventure. The next page started from the scene where they would go on an adventure—introducing the main theme quickly—while the middle part unfolded with ‘being mistaken’ by using a visual parallax to create thrills.

From the previous experience I learnt that a 2-D storyboard could be used to organise and align the original ideas, but this would not be adequate for testing the perception or participatory experiences which are necessary for unflattened picturebooks. Therefore, I made another mock-up to test all the design and review whether the plot was suitable for these pages, testing whether the visual flow was smooth, and testing whether the holes were located logically enough against the surrounding pictures.



Figure lxxxiii Book dummy 2



Figure lxxxiv Book dummy 2

I preserved most of the underground animals that I originally planned, but they would make readers feel ‘thrilled but not scared’ this time. Therefore, I started to look for similarities between them and other dangerous animals—a subtle homage to ‘Shark in the Park !’ (2007). For example, when viewed through the hole, an armadillo’s tail lacking a fuller context resembled a snake because it was long and also had scales (Figure lxxxiii, Figure lxxxiv). A badger’s paw looked like bear paws. A squirrel’s tail could also be taken as a fox’s as they had similar colours. It was hard to relate moles to dangerous animals, so I decided to set them as the two ominous ‘eyes’ looking from the two holes.

I ordered the animals’ appearance in the story according to their sizes to foster an incremental sense of danger. Moles were first because they were small and harmless. As the atmosphere got more intense, there would be squirrels, armadillos and badgers. Although it was probably difficult for the readers to grasp this intention, they would subconsciously get some hint of it as they encountered bigger and bigger animals. This was inspired by Maurice Sendak, whose ‘Where the Wild Things Are’ (1963) adjusted the rhythm of the story by increasing and reducing the sizes of the pictures.

What’s worth mentioning is that the use of cut-out in this version largely differed from what was used in the previous versions. The first version featured a hole on each page, while for this version, there was only one hole for every two pages once the adventure began. The purpose was to make the readers stay longer at the current page, so they would appreciate the pictures before them rather than being carried away by what was revealed by the next hole. In addition, such a plan was aimed to endow the book itself with elements of repetition within the narrative. The readers would follow the characters to constantly go in and out of the holes, leading them to an unpredictable ending.



Figure lxxxv Book dummy 2

Moreover, to avoid being overwhelmed by the huge amount of information I could end up juggling during my design, I returned to the ‘simplifying’ principle that I previously used—using abstract shapes to present the characters, to leave the main content of the scenes out of the holes for now. I placed the rabbits in an entirely dark environment where the only brightness came from the holes. I projected the ‘light’ from the holes onto the rabbits to add a frightening touch, which in turn could highlight the entrance of the holes so that readers would be attracted to them and look forward to turning over the page to see what would unfold. Taking the scene with the moles as an example in the mock-up, I set the locations of the main elements—the rabbits on the left side of the page spread, the hole on the right side, and the moles on the next page but only showing two eyes through the hole (Figure lxxxv). Being able to actually flip the pages back and forth, I could not only adjust the locations of the elements, but also predict the effects that the book would offer to the potential readers. After I determined the locations of the rabbits, the hole and the two moles, it became easier to plan what the mole hole looked like. The rest of the characters and other elements could be more easily arranged based on the two moles whose locations had been fixed. For the rest of the animals, I applied the same strategy—deciding which body part

should be seen first and then aligning all the other characters and elements in the three consecutive pages with the same model.

It's worth mentioning that when I was coordinating these elements, I accidentally turned over one of the pages with a hole, which then overlapped with the previous page. The rabbits on the previous page just happened to peek through the hole. This effect caused by mere coincidence suddenly excited me. The rabbits, as if hidden there, added an interesting element to their characteristics—obviously they looked worried. I revised my story setting immediately and changed the chubby Rabbit C into a timid character who always hid at the back of the group and would always be reluctant to get into a hole. The unexpected inspiration reminded me again that I should not just focus on relating a hole to the pictures on the next page, but also consider the pictures on the previous page to make sure they transit well with the hole.

For the ending, I wanted something unpredictable to break the repetitive rhythm established throughout the book and surprise the readers. To achieve this, I planned to add some actual 'danger' since the adventure so far had been thrilling but not particularly dangerous. I set up a scene whereby the rabbits saw some ears popping up from the next hole, which looked like rabbit ears. They assumed there were other rabbits there. After turning over the page, the ears are revealed to belong to corsac foxes. These underground animals also have big ears, and hiding part of them would make them look exactly like rabbit ears. In the end, the rabbits bump into the corsac foxes, they are frightened and run away—while the readers who had been lulled by the repetitive rhythm of the narrative so far would be shocked as well. The readers would lower their guard, much like the rabbits did; unlike the rabbits, they would welcome the new thrill. Such design also made use of cut-out features. But this time it was the opposite to the previous scenes—what seemed safe actually wasn't, which made the story somewhat ironic. After finishing all the mock-ups, I bound them together into a relatively completed dummy book—the first version at this stage.

It would be fair to say that for designing unflattened picturebooks, a mock-up or physical dummy book is more effective in terms of arranging and planning the content than a storyboard is. A physical book conveys part of the story in it, so

during the designing phase, the function of the book itself as a physical entity should be considered to ensure that it functions properly throughout the story. A storyboard's two-dimensional format makes it difficult for designers to perceive and construct its three-dimensional properties by sheer imagination. Also, the physical book enabled me to flip the pages, so I could feel the rhythm of the storyline within the book.

With all of this practice, I had gradually learnt the issues of which to be mindful and the creation steps for an unflattened picturebook. I had continuously and even repetitively tried to balance design and conceptual elements to make sure that unflattened design served the story, and to create a participatory reading experience. Just as Paul Rand argues:

To design is much more than simply to assemble, to order, or even to edit; it is to add value and meaning, to illuminate, to simplify, to clarify, to modify, to dignify, to dramatize, to persuade, and perhaps even to amuse (Rand, 1993, p. 3).

By now, the general style and structure of the story had been constructed, but there was still work to be done on the detail. Therefore, I decided to use artwork to make subtle embellishments and detail the story, as well as determine the visual style of the book.

5.4. Exploring the Visual Language

Doonan (1993) claims: 'Pictures have two basic modes of referring to things outside themselves: denotation and exemplification' (p. 15). Denotation means the symbol in the picture refers to the specific things it denotes. Exemplification means that when the picture wants to express situations, ideas and other abstract notions that cannot be directly explained, it may present it by 'the qualities or properties which the pictures literally or metaphorically display' (Doonan, 1993, p. 15). This mode is not as direct as denotation; artists must select the means from a variety of possibilities which can cooperate with images and words. Exemplification is an open expression, and there is no single correct answer. Creating a picturebook requires balancing these actual symbols and abstract notions to express the concept and find harmony (Doonan, 1993).

As the previous dummy book had determined the environments of the holes for each type of animal, for the next part, I would continue to detail the scenes and determine the technique and media as well as the overall style. I tried collage, engraving and digital painting in succession; of these, engraving stood out with the most vivid yet subtle effect. However, as this book was aimed at studying the application of unflattened design in picturebooks to convey the story, and was not merely a personal art project, my artwork at this stage aimed to achieve clear denotation rather than attain both modes. So, I decided to use a computer to simulate engraving effects with overlaying colours. This would be a lot less time-consuming.



Figure lxxxvi Color test of *Once upon a hole*

At this stage, I mainly experimented with two scenes with the holes involving armadillos and moles (Figure lxxxvi, Figure lxxxvii). I started with detailing them and determined their shapes. Then I rearranged the scenes together with the blocking and movements of the characters, before balancing the colours as well as the light and shade of the environment in the holes and on the characters.



Figure lxxxvii Color test of *Once upon a hole*

By using artwork, I had gained some confidence in the visual style I wanted to pursue, so I added some coloured concept pictures to the dummy book and reviewed it again. This time, I noticed more issues. First, the scenes out of the holes looked hastier and less detailed than the scenes in the holes. Plus, the perspective issue in and out of the holes became more prominent as it was almost impossible to tell how the spaces in and out of the holes were connected. Moreover, how did the rabbits pass from one hole to another? The transition had not yet been clarified. The part that would involve the participation of the readers was also a bit dull as they could do nothing but guess what the animals would be in the next hole. I knew the book would also be revised at this stage. From my previous experience, the addition of visual information such as picture details and colours can sometimes affect the visual coherence and logic of the serial information.

After spotting these issues, I decided to study what the real holes look like, so I could present them in my book in a more accurate way. Hopefully this could inspire me about how to build subtle and creative connections among the holes in order to enrich the story and make it more exciting. I started to collect materials when I discovered a documentary by the BBC called ‘The Burrowers: Animals Underground’ (2018), which introduced lives of underground animals who live in holes. The production team rebuilt holes according to animals such as rabbits, badgers and water voles reside. A piece of glass which functioned as a transparent ceiling over the holes enabled viewers to directly see what the animals’ underground lives looked like. This documentary greatly inspired me. I got to

know what the light and shade looked like in an actual hole, as well as the layout inside. Moreover, as I was able to see how holes were connected in real life, I came up with more ideas about the transition among the holes in my story. When making a conventional picturebook, ‘research’ should usually start at the beginning. However, as I was still lacking experience in making unflattened picturebooks, I wanted to keep things simple at the beginning to make myself be more focused. I am sure that next time, I will have more confidence to plan everything ahead.

5.5. Level Up: to Apply More Narrative Aspects of Unflattened Design

The work of balancing and planning the relationship of conceptual elements and the unflattened design to convey the fictional world constantly ran through the whole project. Since this book only applied the unflattened design to explore spatiality, I decided to investigate whether I could design from the perspective of materiality or dynamics, to enhance readers’ sense of participation in these two perspectives. Designing the experiences in a story always reminded me of game design, the ultimate goal of which is to create experiences for the gamers. The players wouldn't physically be in the visual world, but they are closely connected to it via media such as the screen, keyboard, controller, etc.—which are used to control the characters in the games to gain an ‘immersive’ experience. For me, books accomplish the same thing as these media do. I started to try to apply ideas from game design to my work, designing experiences myself.



Figure lxxxviii Mock-ups of *Once upon a hole*

As a game designer trying to design an experience, your goal is to figure out the essential elements that really define the experience you want to create and find ways to make them part of your game design (Schell, 2019, p. 22).

To apply Schell's game design theory, I needed to start by deciding which experiences I wanted the book to offer the readers through its dynamics or materiality. For this book, the main experience would be centred on 'adventure'; readers should be able to explore with the characters and even help them to complete their goal in order to enhance the sense of participation. To achieve this, the rabbits should be 'passive' and the readers 'active'. I realised some movable and interactive elements could be added to the paths connecting the holes so that readers would be able to participate. I could make use of the dynamic feature of books to enable readers and rabbits to pass through the holes together while revealing the story in the holes. During the case study, I investigated the dynamic styles presented in some published picturebooks and concluded that the most commonly used and also the easiest way for me was to apply lift-flaps and foldable pages. By flipping these pages, different dynamic effects could be

achieved. How was I to combine these mechanisms with the scenes in the story? As usual, I first created a draft to organise my ideas and then made a mock-up to test the effects (Figure lxxxviii).

I did many trials during this practice. Although some of them had acceptable dynamic effects, I couldn't apply them to this project because there were many constraints. First, I needed to ensure that the locations of the holes as presented in the demo were not changed too much. The locations were based on previous measurements. Moving them would affect the content on the previous and following pages, resulting in countless edits. Plus, not all techniques were applicable, due to the perspective of the spaces in and out of the holes. Not all the links between the holes were spatially and visually reasonable. To meet these conditions, I had to give up some of the ideas. Finally, for the sake of the narrative rhythm of the whole book, I hoped that the participatory elements could be incrementally more complex, so there would be more depth. After constant trials, I finally decided on a few designs that were in conformity with spatial relations, provided participatory experience and showed a sense of incremental rhythm.



Figure lxxxix *Once upon a hole*



Figure xc *Once upon a hole*

Before the mole hole, it was only the beginning of the story, so there was no need for unnecessarily complicated experiences here. During the review, I only used

cut-out as ‘camouflage’ for this part, apart from detailing the space around the hole. On the way from the mole hole to the squirrel hole, I added a tunnel linking the two holes and applied a flap page. I drew the characters with different movements on both sides of the flap. When flipping the flap, there would be animated effects of the characters, and the distances between different characters would also vary, so that the relationships between them could be revealed (Figure lxxxix). I put Rabbit C on the left side of the page spread while Rabbits A and B were to the right of Rabbit C in the form of a flap. This showcased Rabbit C’s reluctance to move forward, and the comparative bravery of Rabbit A. Before flipping, Rabbits A and B were facing Rabbit C on the left, but after flipping, they would face the right. Flipping the flaps showed that they would march forward, which also showed that the story was developing in the same direction. It also increased the physical space between the two other rabbits and Rabbit C. When readers flip them, they would feel as if they were controlling the characters themselves, which can enhance the interactive experience brought by the book, as well as give more vivid personality to the characters.



Figure xci *Once upon a hole*

In the scene where they are on the way from the squirrel hole to the armadillo hole, I designed a coal trolley that could be dragged and moved (Figure xc). Readers could drag the trolley to move forward, which would press ahead the development of the story with an even stronger animated effect. The starting and ending points of the trolley were also important. It had to stop at a certain point which overlapped with the entrance of the armadillo hole, so when readers enter

the next page, they would see that the rabbits on the trolley become part of the story, looking into the hole. For the connection between the armadillo hole and the badger hole, I used an irregular-shaped page, so when readers flip it, the previous and following pages would echo each other, and the ‘flipping’ action would be meaningful in driving forward the development of the story. In the end, after they escaped from the fox hole, I designed a pop-up to create a shocking effect, as if the rabbits were running towards the readers. If they shake the book, the pop-up would vibrate, like the rabbits were running along the book. It could also create different layers so readers could view the scene from different perspectives (Figure xci).

While designing these structures, I had to make a few mock-ups to test whether the expected experiences could be achieved, whether the visual flow was smooth, and whether the pictures were logically connected. It would not be easy to predict the actual feeling and experiences achieved by the final work only by imagining or creating two-dimensional pictures, even with simulating a three-dimensional effect. Plus, making an actual demo could help me to determine whether these structures would be achievable by the techniques used in the final book production. Through constant testing, flipping and dragging, I was able to figure out whether these structures would be smooth enough for the reading flow. Meanwhile, the elements in the pictures including the characters’ locations, and sizes would be adjusted during the testing. All these trials and errors would be helpful for achieving a satisfactory final design.

During the testing, I also perfected the characters and the story, in terms of their shapes, styles, the language that they used, and their actions. This was intended to make them more detailed and vivid. In the final version, I removed the birthday scene at the beginning and replaced it with a simple agreement between the rabbits about going on an adventure. As Rabbit C was an overthinker, she was reluctant to move ahead. Compared to Rabbit C, the protagonists Rabbit A and B were a bit more careless. They were very persistent about the adventure, so they never hesitated—just walking and moving on. It was their persistence that made the journey possible. I also added a dramatic surprise at the end of the story, making Rabbit C mistake foxes for rabbits. Because she was so longing for safety, she couldn’t keep calm and sensible anymore. The ending twist was that Rabbit C

—who was the frightened one always talking about safety—made a mistake and led everyone to danger. I also adjusted the style of the pictures at the ending to make it generally more concise and simpler. I have to mention that colours are significant in the book as they play a transitional role. For example, in the tunnel, the colour change between the holes tells the readers where the rabbits came from and where they were going to. When there are no animals involved, the colours provide a clue about where they are going to. In the end, after everything had been determined, I marked the cut-out locations, sorted the different components into layers, and marked the pasting points before sending it to print out and physically added in the flaps and other movable parts of the book after it was professionally printed.

5.6. Conclusion

To conclude this project, ‘Once Upon A Hole’, I recognised that unflattened design and the structuring of the story should inform each other. There can be back and forth, but achievements will eventually be made in a spiral since unflattened design and the story are mutually restricted and served. Even the development can be achieved through trial and error, it is always important to be familiar with the physicality of the book-object and master different techniques that can assist the three narrative respects—spatiality, materiality and dynamics. Also, ‘Once Upon A Hole’ is a ‘character-driven’ story (Coles, 2019); the plot moves forward because of Rabbit A’s personality—namely, he insists on being brave and going ahead to explore and Rabbit B follows him. However, Rabbit C is timid; it brings conflict and enhances the levels of the story. I am aware that the character-driven story can assist the unflattened design and help determine the mechanisms because the unflattened design is used to present and serve the action of the protagonist so that the reader can experience the story and play as the protagonist. Therefore, the unflattened design and characterization are related—restraining and promoting each other.

Paul Rand’s famous quote ‘Design is relationships. Design is a relationship between form and content’ (Kroeger and Rand, 2008) is the core for designing unflattened picturebooks. All in all, everything (the structure of the story, unflattened design, ‘denotation and exemplification’, etc) should take experiences

into account. Experiences must have a dominant role in unflattened picturebooks, as the books would otherwise lose their special charm and characteristics. My previous work and case studies, as well as the theoretical research during my doctoral years, pave the way for this project. The methodology of a ‘designerly way of thinking’ and ‘reflection in/on action’ is the basis for this work. In addition, I have kept learning from other masters’ works and theories and applied them to my own practice in order to make progress, which helped me in finding out the final method and the best way to create this picturebook. At this stage the book is not perfect—in either the play experience or in the aesthetic of the images. There is still much room for improvement, but at the level of design methodology exploration, it serves its purpose.

Chapter 6. Conclusion

In this research, I have defined and analysed unflattened picturebooks and formulated a set of design methods to facilitate unflattened picturebook making and to guide and inspire fellow designers. Unflattened picturebooks are distinguished from conventional illustrated picturebooks, which create an experience via the combination of pictures and text (if included), by conveying stories through the physical attributes of the book itself.

In the first chapter, I argued that the process of picturebook making is a design activity. This is because, in their complex creative processes, picturebook makers are required to apply knowledge of, and balance the interactions between, literature, painting, book design, children's education, and more. I then defined what an unflattened picturebook is and advocated that the theory of designing unflattened picturebooks aligns with Carrión's 'The New Art of Making Books' (1975). 'The new art' emphasises the interaction between the conceptual elements and the form of a book to convey the author's intention to the reader, in contrast to 'the old art' in which the text alone conveys such intention.

Furthermore, according to Dr David Whitebread's educational theories on children's play, I suggested that an unflattened picturebook is a helpful educational tool that involves at least two types of play. On the one hand, it can be played with like a toy to improve children's cognitive and creative ability. On the other, it can serve as symbolic play and stimulate visual and linguistic acquisition. The better the overall concept and design quality of an unflattened picturebook is, the more comprehensive an experience it can create for children.

Based on Cross's design research methodology, knowledge is found 'in product, in people, in process' (1999). I first started analysing the predecessor of unflattened picturebooks, movable books, in Chapter 2, because they both emphasize a high level of craftsmanship and aim to provide readers with an active reading experience. Combined with in-depth case studies in more recent unflattened picturebooks, I proposed that there are three narrative aspects for unflattened picturebooks; spatiality, materiality and dynamics. These three aspects should be considered by picturebook makers when they work on the narrative of an unflattened picturebook. However, I also explained that unflattened picturebooks cannot be classed as movable books, novelty books or contemporary pop-up books. The most significant difference from these types of books is that the inherent attribute of books as a material object plays an important narrative role in the narrative of unflattened picturebooks, thus creating multi-sensory

reading experiences. Therefore, a book as an object itself becomes a physical and tangible storyteller.

In Chapter 3, by studying the work of the renowned master in unflattened picturebook design, Bruno Munari, I concluded that there are two main design methods that can guide both beginners and experienced designers to make unflattened picturebooks. First and foremost, a designer needs to explore the inherent physicality, and the possibility of a book as an object to better apply them to unflattened design. The best way to achieve this is through hands-on experience, to integrate these theories into practice. In addition, with his understanding of media, Munari has provided us with another effective method—to impose limitations at the outset of the design process and explore material possibilities and potentials under restrictions. This is a useful method for initiating innovation which has been discussed in this research under the umbrella of ‘Decisive Constraints’ (Mose Biskjaer and Halskov, 2014).

I discovered that Munari has also presented a problem-solving design method which can act as a guide when designing unflattened picturebooks. The designer needs to have a clear plan for their activity such as being clear about the aim, the existed modes and methods, testing with prototypes etc. The method is aimed at serving practical and user-friendly designs to users and helping them to solve problems in everyday life. It can be regarded as a ‘designing of mind and emotion’. In terms of the unflattened picturebooks, their objective is to enhance children’s overall developments through multiple types of play, also to emphasize the creativity of communication which subvert the traditional sequential reading path with picturebooks (Campagnaro, 2019). From these goals, Munari has designed several unflattened picturebooks that exemplify what a truly successful unflattened picturebook should be, and provide children with unique reading experiences that can enhance their personal development. However, as with all other designing and artistic methods, they should not be rigidly followed in the same ways as formulae, and may vary depending on the realities of each design.

Studying other people's works and design methods not only helps me research and further recognise the unique characteristics and design methods of unflattened picturebooks, but also directly helps my own creation. Chapters 4 and 5, following Schön’s theory of reflective practice, my practice has highlighted the role of design in the storytelling of an unflattened picturebook and demonstrated the ideas and thinking behind the unflattened picturebook design method. I found that the conceptual elements and the book-object are mutually informed in an

unflattened picturebook. There are multiple complicated factors which need to be balanced and arranged; the setting of the plot, the trajectory of the characters, the arrangement of the scene and the unflattened design etc., all need to be considered and tried at the same time. I also realized that the physical form has more limitations in delivering the narrative than illustrations do, which means the narrative needs to be modified where necessary to accommodate the physical form. Moreover, to retain the integrity and aesthetics of the unflattened picturebook, the methods employed to present the participatory experience need to be unified. I am confident that my practice, although personal, can have a generalisable impact on this niche subject. ‘Once upon a hole’ has been selected to be one of the 80 books for the dPICTUS *The Unpublished Picturebook Showcase 2* (dPICTUS, 2020), which has been presented online at the Frankfurt Book Fair. This success indicates that this book meets an identified need, is marketable, and provides an external measure to evaluate whether this whole book project has been successful.

In conclusion, this research firstly defined this special type of picturebook and provided a new possibility of how to create picturebooks. Secondly, it provides a methodology for any designer to employ and produce unflattened picturebooks. Thirdly, the artistic practice has refined the model to make it more complete and generalised the design methods, which can benefit and expedite the designer’s discovery process of unflattened picturebook design. For example, making and testing mock-ups is crucial when making unflattened picturebooks. It is also a way to understand the nature of the book-object, just as the artist understands the nature of their drawing material through constant practice. Furthermore, the use of restrictions, or knowing which narrative aspects one wants the book to reflect, can consolidate the whole design process. Last but not least, the unflattened picturebook is an easy-to-use educational tool to stimulate creativity; they affect the readers’ conceptions not only of books but of what kinds of reading are possible. I believe that my experiences can not only guide unflattened picturebook design, from the cognitive stage of exploration to the more advanced stage of hands-on practice, but also provide new insight into picturebook making and can be valuable for those who are also interested in exploring this field. Just as Munari did, I recorded my designing and idea-forming procedures, creating a valuable resource for subsequent designers.

My ultimate aim is to contribute to the picturebook design education area—specifically to explain clearly why unflattened design matters in picturebook-making, and to inspire more practitioners to master this method in essence. After

my research, I will first devote myself to teaching. Princeton University professor Nick Feamster writes:

I find that teaching a subject is perhaps one of the most efficient ways to become embedded in a subject matter, since the process of explaining concepts to students leaves no room for “cutting corners” in my own understanding. (Feamster, 2013)

Teaching can help a researcher build a strong foundation of knowledge and encourage them to study the paradigms and theories in the area. Also, teaching helps me examine whether I have made any oversights and whether it can be adopted by the practitioners efficiently in their picturebook-making. I would like to collect my findings and publish academic books to pass on the theories to other students and picturebook designers. Moreover, as a practitioner I would then like to work on more unflattened picturebooks to understand the implications of these results better and in turn further develop the research—in particular, the relationship between engineering, illustration and design, which may be a valuable research direction for further studies.

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Appendix

Appendix 1: Interview with Katsumi Komagata

Location: Shanghai International Children's Book Fair, China

Date: 17 November 2019 / 11:00 AM

Interviewer: Yang Dong (D)

Interviewee: Katsumi Komagata (K)

D: What experiences in your life helped you to develop your imaginative ability?

K: I am a graphic designer, so I try to solve problems through communication. I was in the United States for almost seven years. At the beginning, I couldn't speak any English at all, so I always had to guess what was happening around me. So this gave my imagination training.

D: When you made *Green to Green*, how did you balance the words and what paper you wanted to use? And did you plan what kinds of imaginative experiences you wanted your readers to have?

K: Well, of course I do sketches first. But then I cut out the paper into the real things, and next try to make the mock-ups. So I always see what happens in the reality. And then if I need to change, I change, and if it's okay, I just keep going. I always work with mock-ups.

D: Do you check children's responses to your books as you're working on them?

K: Well, I played with my daughter. So I always have a partner when I was making books for children. But this is not a general practice. This is pretty rare. So I don't know if it could be suitable for everyone. I'm not too sure, but I can say this was quite a personal experience. I make the books for my daughter at the

beginning and then if some other people like it, we try to publish it. And then they can buy it. I always start from a very small idea, and then go little by little.

D: When you were making *Little Eye*, did you observe your daughter to see what she needed from it?

K: Yeah, because at the beginning of making the books, she didn't understand any words, or any language at all. So I tried to have visual contact with her. If she didn't respond well, I just threw the idea away, and then if she responded well, I picked that. So, I collect the things she responds well to. This way, I actually made a lot of little cards by hand. This way, we can discover different things.

D: Do you have a purpose before you make each card?

K: Of course, I have some visions. But I don't want to force my ideas or thoughts on her. I just invite her to interact with my cards. If she wants to touch them or do something else with them, of course I let her do that. So in this way we can create communication with each other.

D: It is more like you play with her, rather than force her to understand your ideas. And then you select the ones she responds well to and publish them.

K: So, at the time I made a lot of dummies and showed them to my daughter.

D: Why, then, did you change to using paper instead of cards in your later works? You're a designer, and I think designers want to solve problems and don't want to create problems. But paper is very expensive and easy for children to break.

K: In general, we adults think we should take care of children very well, and they break things very easily. But in childhood, they need to learn that things can break, and how to treat things very gently. We have a lot of fragile things around us. Human beings are also fragile. Children need to learn you shouldn't just treat something roughly, break it and leave it alone—not that way. So I want children to care more, and train their sensibilities with paper, because paper is also fragile. But in general, with books for children, we try to use thick paper, because we

think children are very rough, so they are going to break it anyway. Not all of them, but some of them could be that way. So, I would like to take this path.

D: Did the idea come out suddenly?

K: Well, I really liked to work with paper originally. So, I have always been interested in working with that.

D: Did you already start to work with paper when you were in New York?

K: Yes, yes. Because when I was working for CBS in the early '80s, in New York, the economy was not good, so our budget was very small. We could only choose a paper and then maybe print just one colour. This was to make nice invitations or some other cards for promotional things. So, I was working with very small projects. It gave me the chance to see the papers every day, figure out which paper I could use, and then which colour could be suitable for each paper. You know, that kind of thing. So that gave me good training to work with the papers for sure.

D: Do you think American paper is different from Japanese paper?

K: Oh sure. Yeah, I think Japanese paper has more range—there are lots of different kinds of papers. So I'm very happy to be there in Japan, because there are many choices, and then the papers can be selected and mixed in many different ways.

D: You feel like you are you in a paper heaven?

K: Haha, yes, and I've been doing consulting for a paper company in Japan called Tokushu Tokai Paper industry. I like consulting and giving advice on which ways we could develop the papers and colours some more. I always have a chance to see the papers. It's a good atmosphere.

D: How long have you been consulting for them?

K: Almost 10 years.

D: Oh, that is why you know paper so well.

K: Yeah, sure!

D: But they can produce many different kinds of papers—maybe thousands of different papers. So how do you select paper?

K: As I said, I always make mock-ups and see the balance of the colours and thickness and, you know, texture and everything.

D: It takes a long time.

K: Yeah, kind of.

D: I find your text very beautiful. The other day, I remember you also gave us a poem in the talk. Did you write that?

K: Yeah, yes.

D: That was very, very beautiful.

K: Thank you.

D: Because I think sometimes, some artists and illustrators are very sensitive to the images, but not really good at writing words. But you have the sense to write very beautiful words.

K: Thank you.

D: They all seem to relate to life. I am very interested in how you trained yourself to write.

K: When I was 23 years old, I went to the US, to a totally different situation. I became like a child again, with a very pure mind to absorb many things in curiosity. So this gave me a chance to think about life and such things. That gave me a chance to write something about life, love, or, you know, about human beings.

D: Do you think your Japanese background also helps you with your style of writing?

K: Yes. Because I had experienced the differences between Japan, Europe and America. They are totally different cultural backgrounds compared to what we have. At the beginning, I was a little bit confused, but then I tried to adapt myself. In that way of adapting myself, I could learn many things, you see, so I could learn how to meet up with such different things, and then how I could adapt to totally different worlds. So that was good training for thinking about life and many things.

D: So, you're trying to summarise what you have experienced with your work.

K: So this is the first time I have come to China. And I'm very interested in taking a look at what people are doing here. Because obviously the language and culture and many things are different from us, but we can share the activities and emotional things like happiness and joy and sadness. Of course, we are different, but then we also can share many things.

D: Do you have religion?

K: In Japan, we have Shinto. Shinto is not symbolic God; there are plenty of Gods relating to nature. We celebrate this out of appreciation of our roots.

D: I can feel peace from your works. Even in a pop-up book, I can feel peace. I think you want to bring peace with your work.

K: Yes. We have tea ceremonies in Japan. The room is very small, and the ceiling is pretty low, and the entrance is also pretty small. Why they set it up like that is because in ancient times in Japan, the samurai was the domainer of the society. They were only allowed to use swords, and then if something rude happened, the samurai could kill the rude people. So, they were very dangerous. And then merchants, they were rich, and sometimes they wanted to communicate with the samurai—but they knew the samurai were dangerous. So the merchants thought maybe they could invite samurai to meet them at tea ceremonies. They made the entrances small so they could ask the samurai leave their swords outside. Then, even if some samurais brought their swords inside, the ceiling was too low and the room was too small for samurais to move their swords around. So, if the samurais

got angry, the merchants could escape. The merchants tried to share tea, of course, and then flower arrangements. And then the picture on the wall.

This is culture. We try to be equal and then share the culture. I learned a lot of from the tea ceremonies in Japan. I think that we could be equal. And not that someone is high, and someone is low. Always try to be equal, and then we can share the activities and culture.

D: I think your works are influenced by Asian culture more than European culture.

K: Yeah

D: Could you tell us the process of making ‘Blue to Blue’? Where did you get the idea?

K: My hometown, in the Shizuoka Prefecture in Japan, is very close to the ocean. So, when I was little, I swam in the ocean and I could see Mount Fuji from the ocean. It's a very nice view. That's the main impression I have of my childhood. It also inspired me to make this book.

When I started making this book, I first came up with the wave of the ocean. There are of course many things happening in the ocean, like swimming fishes, so that was next. Then the story came out. It is about the salmon finding their parents in the sea and returning to the river where they were born to have children of their own.

The salmon lay eggs. So, there is little life coming up. But the baby salmon don't know their parents. They try to find their parents, which starts the adventure. They see the parents of a frog, and a duck in the river, and they keep swimming to search for their own parents. They meet a whale in the north pole. So, something always comes up after turning the page.

They never meet their parents. They come back to their river but smell terrible after the adventure. And then they become parents and have their own babies. When they have to leave their babies is when they understand why they couldn't meet their parents. It is like a circle.

D: How did you choose the paper for this book?

K: I made a lot of mock-ups to match up the colours and also to get a good colour balance. Mock-ups also helped me reach a good solution. Many people asked me why I couldn't make a book with stronger materials, because this is very delicate. But I actually wanted to use the fragility of the materials to teach a lesson to my daughter. When she was around three or four years old, she became very rude. She treated things roughly and broke them. I wanted to help her understand that she has to treat things very carefully and gently. It's easy to say this in words, but I didn't want to pressure her in that way—I wanted her to learn for herself. So, I made these mock-ups and gave them to her. She broke the first mock-up very quickly. I tried to fix it by gluing it back together, and then gave it to her again. Then she changed her attitude a little bit and started looking after it very carefully; maybe she understood its importance. I think adults assume children are very rough and like to break things. For example, we give plastic cups to children because even if they drop one, it won't break. But if we give them ceramic cups and they drop one, it is broken.

Of course, it's very difficult to give such things to children. Yet doing so provides an opportunity to tell them, 'Please take care of this and be very careful and gentle'. I like that sharing this book helps to make that point. And the paper has an age, just like people do. I am old and I've got a lot of wrinkles and white hairs. The book also visibly aged. It has been almost more than 30 years since I started playing with my daughter, you know. The papers became yellowish, and also have lots of wrinkles. I am very glad this can help us remember the time I shared with my daughter. That's why I try to make this kind of book—then we can share the book and share the time together, the calm and quiet.

D: The publisher, Thinkingdom, imports these books from Japan, ‘ごぶごぶ ごぼごぼ’ and ‘ぎゅぎゅぎ’. The editor thinks they are amazing because they've never seen books like this before, but they couldn't really understand them. My interpretation is that you are using the dots to guide the children to play. How did you come up with the idea?

K: Firstly, I made this book for my daughter when she was almost three years old. We were taking a bus together, and then suddenly she started talking about the things that happened when she was in her mother's womb. She said it felt like taking a bus. Also, she heard lot of water sounds, as she was surrounded by water. So, I started to collect the sound of water. Also, babies respond well to eye-like shapes, like circles. Because when mothers get pregnant, the nipples show a very strong color—almost black—and even though the eyes of the baby are too weak to see, they can find this very easy, with that strong color. I was wondering why, and then I realized it's because the nipples look like big eyes. Then I used the eyes here.

Also, for humans to trust each other, we need eye contact to see each other and to read the faces of each other. Even when we don't speak any words, we can read faces. If you smile, maybe babies can smile back. And we can often see a smile in the eyes. So the eye is very important. That's why I worked with the shape of the eyes. My daughter really responded well to that, and the sound evoked her memory of being in her mother's womb.

And then this book (ㄱ ㅎ ㄱ ㅎ ㄱ) is for my granddaughter. This publishing company asked me to make another book for babies, and my granddaughter had become two years old. So, I worked with her to make this book. These books are first and second generation.

D: How did you start this book?

K: Actually, I have many prototypes I've made many years ago when my daughter was little. But some of them didn't get published. It started from there. One day I took the mock-up and showed it to my granddaughter. She responded really well, so I thought why not publish it?

D: How did you plan the rhythm for readers?

K: I did have something in mind already. But then, I always try it with my daughter or granddaughter, and see how they respond. And then if I need to change it, I change it. If It's okay, I keep going. So, I always try to see how they respond.

D: Do you think making books for blind children is different from making them for abled children?

K: Well, I think there is no difference. It's always the same. Of course they can't see, but we always have imagination when we read a book. For instance, maybe some people see these books differently with their imaginations. Some people see it as a bubble, others as a balloon. So, it is important to inspire readers' imagination. When I work for blind children, I always like to inspire their imaginations. So that is the same thing as working for babies, but instead through touch.

D: I think most of your work involves haptic experience.

K: Yes. This book is for blind people. There are always shapes transforming into other shapes with flipping and movement. For instance, from one square to one circle then to three circles. This is the same as making books for abled children. I'm just trying to inspire them to have some kind of imaginative experience, and to have fun.

D: Yeah, I think maybe you had fun first. But why did you use colour here, as this is for blind children?

K: Because for this project, the main concept is to share—not only for blind children, but also for us. I went to visit the blind school, and the equipment there is designed with them in mind, so they don't get hurt or confused. But if they go to a normal school, as we do, I'm sure they would run into trouble. But then the problem is they are always isolated. They don't have any chance to have contact with us. But if we can give them something, like a book to share, then there is a bridge between us. I also developed a workshop program with tactile things. When abled people join, I ask them to wear eye masks. In this way, we can share the activity and program together, without a fence or barrier between us. It's too easy to be divided, but we don't have to be. Actually, we can communicate. We can share the activity, and then we can understand each other more. But, unfortunately, we don't know about these options.

By making books or working through the workshop, we can take this fence away, and then communicate. This is the same story with the tea ceremony. For me, it's very important to be equal. Instead of some being really high or low, we should try to be equal, and then share the activities and happiness.

D: You create a space and culture to change the world and things.

K: Yeah. So, this is the first time I've come to China. I was feeling unsure, because I thought maybe Chinese people don't like Japanese at all. And I am so happy because people here are very warm and friendly. I am very satisfied, and I have had a good time. When I go back to Japan, I can tell everyone that Chinese people are very friendly. It has been a very good atmosphere, but I didn't know to expect that because we didn't know each other. So, this contact is very important.

D: Can you give Chinese parents some suggestions from your experience about how to communicate with their children?

K: When I first started doing this workshop, I always asked the parents to leave the children alone, because the parents often like to interfere. I would have the parents leave during the workshop to make sure the children could work independently. And then, one day, a five-year-old boy cried out, because his parents had to leave. I didn't want to make the children cry, so I came up with a way to prevent parents from interfering without making them leave. So I came up with a program that would keep parents in the same room as their children, but would make everyone busy. Everyone has to work—not only children, but also parents. In this way, parents are around but are not interfering. After we have the presentation of all of the children's works, the children get really excited to see their parents' works. This also allows the parents to get good respect, because obviously, the kids are very proud. So this program change achieved many things.

D: I think your work brings out the cultures you have, like Japanese culture or Asian culture. How do you combine your culture with your artwork?

K: Actually, I lived in the states for almost seven years. At the beginning, I couldn't speak any English. So I always tried to guess what was happening—even in the supermarket. There were many things which I didn't understand. So I

became like a child again and tried to guess, you know, and then tried to adapt myself to the Western culture. And then I realised the differences between East Asian and Western culture. I still tried to adapt, but something remains. I can't be American. I can't be French or Italian. I am Japanese.

Here, I am meeting with Chinese people. We can try to understand each other. But still, we are different. So, for me it's very important to see the difference. It was also important when I worked with blind children. Now I'm working on a project for colour blind people. I didn't know many of them mix up the colours green and red. But then when I started meeting with them, I quickly found that difference. When we see the differences, we can try to understand each other more. Luckily, I've had the chance to go abroad to visit many places. Of course, I learn a lot about other cultures while doing so, but still I am Japanese. It is a bit like how the noodle originally came from China, and then came to Japan. It is still a noodle in Japan, but the Japanese have their own way of making it.

D: I can understand. Although I have stayed in the UK for six years, I am still Chinese—but I see the differences and try to understand them, yet I keep my own culture at the same time. Could you give some suggestions for young designers who want to make art works like you do?

K: Many illustrators have good drawing and even painting skills in many cases, but some of them just want to show off their technique. However, if they want to make a book for children, at the very least they have to face the children and see how they respond. Just like plants in the field. There are always seeds underground, but we have to expand the root. So, when we create something, we have to have this field and have the seeds underground. But to expand the root, we need to give water and nutrition, and then the seed will sprout. Then other people see this little sprout and they can make it grow together. What we can do is just make the little sprout poking out. That's all we can do; we can't create the full-grown plant ourselves. I like to say to the young generation that it's okay to show off their technique or talent. However, if they really want to make children books, they need to make the field, get a seed in there, add the water and nutrition, and then let others do the rest.

D: You mean you want those illustrators to give readers room for interpretation.

K: Yes, it could be not perfect. It's okay. Even this is not perfect—it's just small things we can give to inspire them. So, let them work with the books, that's my point of view. I saw the illustrators yesterday; everyone is very eager to absorb something from us. And I'm very impressed. They have good techniques and skills for drawing and painting. So I just advised them that when we make children's books, we obviously need to face the children.

D: So it encourages those people to understand children more.

K: Yes.

D: Could I ask what your daughter does now?

K: She works with me. While I was in the hospital because of blood cancer, my daughter came one night. She already had a job at some other company in Japan, but that night she said she wanted to work with me. I wanted her to keep up her career as a fashion designer, but she insisted on working with me, so that gave me a big encouragement. We have worked together ever since. She now has a second baby.

D: Thank you so much for your time. I will see you in Beijing soon.

Appendix 2: Interview with Louis Rigaud

Date: 06 December 2018 / 11:30 AM

Location: Le garçon de café (Clichy), Paris

Interviewer: Yang Dong (D)

Interviewee: Louis Rigaud(L)

D: What are the benefits and advantages of pop-up books from the narrative perspective?

L: Pop-up is a way to play with the book-object and illustration. The animated book gives a lot of possibilities; it offers readers new ways to imagine, to read, to manipulate the book. I think that by combining these technical possibilities with narration and graphical styles, new reading experiences are created.

D: Do you normally come up with the stories according to the pop-up techniques, or do you find the right techniques after you have a story? Are there any principles or rules about how to use the physical space of the pop-up book as one of the narrative elements?

L: In any project, paper-based or digital, the chosen technique must be in accord with the narrative or the theme. In the case of pop-up books, we think of all aspects at the same time, the pop-up technique, the storytelling and the illustration. These three aspects must work together; they must complement each other. When we work together as a pair, we go back and forth between the forms we like in 3D and the style of illustration, and what story we want to tell with that. A pop-up technique can inspire an illustration, but it can also work the opposite way. We work until we are satisfied with the whole page.

In 'Popville' for example, we tried to find a story that can make more sense in the pop-up form. Because pop-up is about construction, deconstruction and 3D elements, we thought it would be easy to represent the city with pop-ups. We also

found this idea of more and more buildings and houses appearing every time the page is turned. So the techniques we found really have meaning within the story we want to tell. For every project, the common questions are; how to draw the illustration, how to find a good technique which can tell the story, and make them work together. For me there is no rule in the pop-up, on the contrary, there is still a lot to invent because the animated book allows you to get out of the frame of the classic book and play with the format, the paper, cuts, binding, reading direction, etc.

D: I assume you tried a lot of techniques for all of your ideas?

L: Yes, because we are two people working together on the book, we talk a lot about our ideas to think about which are good and which are not. Sometimes we get a good idea really quickly and find a good solution; sometimes we can't find one, so we just cut paper and make mock-ups to see what works and what doesn't. But we are always working together, so we can share ideas very quickly and discard the bad ones. I think it's a good way to work.

D: Most of the time, you are the one to make the pop-up, right?

L: Yes, and Anouck does the illustration most of the time. In most pop-up books, there is one paper engineer and one illustrator working on one pop-up book project together. The paper engineer creates the book, and then the illustrator tries to draw on the product, oftentimes they then need to go back and forth every time just to adjust the illustration to make it work with the pop-up design.

D: 'Popville' seems to be more complicated than your other pop-ups projects.

L: Yes, with 'Popville' and 'In The Forest' we worked with a paper engineer because it was our first time working on a pop-up book and we didn't know anything about printing. We didn't even know how to print a classic book or how to make the appropriate file for a printer. But hélium was working with Bernard Duisit at that time, and I think he is the best paper engineer in France, one of the most famous certainly. They worked together for a long time, since the beginning of hélium. In 'Popville' he made the files for the printer to use. He also worked on 'In the forest', but 'In the forest' was very complicated, even for him, because it's

not a regular pop-up technique we used. We spent a lot of time developing the pop-up technique, creating a dense and abundant forest while respecting the constraints of the cut-outs in the pages was difficult. He had a very hard time making it work.

We made a 'Popville' mock-up which has all the different stages involved in the creation of a book. We made mock-ups which are like a binding book, and then the paper engineer developed the techniques. In the beginning, we used low-quality paper and made very quick illustrations.

D: Those look so amazing.

L: But fragile.

D: So you used different types of paper trying to see which types work?

L: Yes.

D: It is almost eight years old?

L: Ten years old until now. We made it in 2007. I made lots of little mock-ups like this to try and see if the idea works and whether to continue working on the idea or not. Later we made a better one, which we showed to the publisher before we knew if the book would be published.

D: I am so lucky to see the original one.

L: Yes, the very first one. There are four pages, and we hadn't even worked out how to do some of the pop-ups in it yet. After we met the publisher, we added some pages, and we made some modifications to the book to make it more like a children's book because this is more of a design book before the edit.

D: What were the modifications you made to the book?

L: We added two pages just before the last one, to make the story last a bit longer and we also added some details and elements for the children to name or follow from page to page, like cars, fields and trees.

D: This mock-up is from after you talked with the publisher?

L: Yes, after we talked with them, we thought a lot, and we gave this mock-up to the paper engineer to make the files for the printer from.

D: Then they worked on choosing the right techniques and paper after this version?

L: Yes, they worked on how to simplify the design and minimise the number of pieces of paper, because when you print it, you have to be careful of how many glue-points you use and how many pieces of paper we need to cut. So to make these easy to print, you have to design the pop-up so that there is no mistake in the final publication. You have to know where to cut and where to glue.

D: Is this the paper engineering's job?

L: It was their job for 'Popville' and 'In the Forest'. The paper engineer sent the files to the printer to make this, then we checked that there were no mistakes, everything was fine, and then we added the illustration. We did the paper engineering ourselves after those two.

D: Is it like a learning process, where you learn how to do paper engineering?

L: Yes, as I told you, after 'In the Forest' we started to do the paper engineering ourselves. 'Oceano' was the first book in which we managed everything at the same time, on the same file, combining the illustrations and the guidelines for the printing process.

D: For your first project, 'Popville', did you find the publisher hélium immediately?

L: In fact, they hadn't set up the publishing house yet when we met them for the first time. They were at the beginning of establishing it. Anouck met them at the Montreuil children's book fair in Paris. It's a very big children's book fair where you can meet publishers as an illustrator to show your work. Anouck met someone who was working with the people who were creating hélium. So we were lucky because they were at the beginning of creating this publishing house.

It was our first book, and they had only a few books in their catalogue, maybe only ten books at the beginning. And 'Popville' was one of the books they used to promote themselves.

D: What did they say about this when they first met you?

L: A lot of publishers said it was very good and it should be published, but at the time in 2008, there weren't so many pop-up books being published. There was 'ABC3D' by Marion Bataille of course, but most publishers at the time didn't know how to publish a pop-up book. Now you see lots of children's book publishers publishing their own pop-up books. The only hélium told us 'okay, we will do it because we know how to do it'. They worked with Bernard Desuit, and Gérard Lo Monaco, another well-known paper engineer in France, and also an illustrator, his books are very popular. He does know how to use a computer-aided design but works by making mock-ups by hand. He was the art director of hélium at the beginning.

D: It was a really good start; you had lots of good artists to work with.

L: Gerard Lo Monaco helped us by giving good ideas on how to make 'Popville'.

D: Hélium is very famous now. They have a lot of books, and most of their books are novelty books. Such as the most famous 'Can You Keep a Straight Face?'. So after that, you just stuck with them and worked together?

L: Yes, because we work really well together

D: Do they give you enough freedom to be creative?

L: Yes. Yes.

D: Are they very involved in the creative stage of producing the book?

L: For example, when we finished 'Popville' and the book was sent to the printer, they asked us, 'Now you should think about creating a new book and show us something'. But it was really free. And it is still like that now, every time we do something new, we show them what we want. We really are free regarding the shape or the size of the book. Once we start to work on a project with the

publisher, he is involved in the project. He can tell us his opinion or ask us to modify something. Sometimes, as the pop-up book is really expensive to print, we have to remove some pages, make the book smaller or things like that. It depends on the project. For 'Famille Acrobat', the publisher asked us to add one page.

But for 'Oh! Mon Chapeau' (That's My Hat!), when we presented the book, we thought it was too big and had too many pages, too many pieces of paper, but they just said: 'it is fine, we can do it like this'. Sometimes we were entirely free from the beginning to the end, like in 'Oh! Mon Chapeau' we did almost everything without any modifications from the publisher. But with 'In the Forest' we really worked a lot with the publisher because we arrived with a very simple blank model, with only the first three pages and no end, the story was about deforestation, but we did not know exactly how to put everything together. We also worked with the publisher on the narration to finish the book.

D: Did they provide you with a lot of ideas?

L: Yes, some ideas, some advice. And they wrote the text with us. It is always a discussion. We had to make sure everyone agreed before making something.

D: After 'In the forest', you started to be your own paper engineer?

L: Yes, for 'Under the Ocean' we made a lot of smaller mock-ups, for each page we made about ten mock-ups with the same image, in 3D, we wanted to try different designs and compositions.

D: Did you have the two-layer idea first, and then you did 3D?

L: No, we always think in 3D while creating a pop-up book. We discuss the format of the book and the shapes of the pop-up from the beginning.

D: You start the design process by making small models?

L: Yes, we made lots of smaller models, just to try out ideas and find out how to organise the pages.

D: So, you wanted to present different oceans?

L: Early on, we tried to make something which pulls out to see if everything works, we did do a lot of illustration after this.

D: How did you come up with the idea of a boat travelling to the different oceans?

L: For the book 'Under the Ocean' we didn't think of a story at first, we only thought of good pop-up techniques which would work for 'Under the Ocean', then we started to make a lot of landscapes and thinking about what the story will be about, travelling is the obvious answer. In the beginning, we imagined that it would be about two children going on a small boat and something a bit imaginary, and then we decided on a scientific expedition.

D: I think this book is more like a non-fiction book but still with a story inside.

L: I don't consider non-fiction or fiction because they can be linked together.

D: The early version has complicated parts which don't make it to the final version?

L: Yes, sometimes I try to add complicated techniques. But on Anouck's advice, we often simplify it later. We try to make things as simple as possible. This one is the most complicated one we made. We prefer simple illustrations, and by simple, I mean easy to understand. We can easily see all of the drawings. All the pop-up is big. All the illustrations are large. For me, it is important to show that it is not complicated to make a book.

D: Have you had any difficulties doing this?

L: Sometimes, Anouck wants an illustration with fine cuts that you cannot get from the machine. Sometimes pop-up ideas are too complex, and we need to simplify them. In reality, there are a lot of adjustments and small difficulties during the different stages of creation, but that's how the project progresses.

D: Have you ever experienced having to give up some ideas in order to make the pop-up techniques work?

L: I think the idea comes before the pop-up technique. When we stick to an idea, we are looking for the most appropriate pop-up technique.

D: Could you summarise how you achieved the playful reading experiences with the book 'Under the ocean'?

L: With 'Under the Ocean' everything started from the pop-up technique we chose to represent the sea and our passion for the marine world. From a very common technique that allows lifting a plane of the paper, we found the idea of the surface of the water defining the boundary between the surface and under the sea. The animation from slowly opening the book allows the reader to slowly discover what is underneath, and this allowed us to represent the depth of the water.

D: What about 'Oh! Mon Chapeau'? What did you want to achieve with this book?

L: The idea of 'Oh! Mon Chapeau' is to show children that with very few elements, for example with a semicircle you can make a hat, you can create what you want and then create your own story with these few elements. This is not that complicated, exactly the same thing can be done during our one-hour workshops with children, so it was really to show children that with a bit of imagination and a few things you can create yourself a story.

D: All the elements in the book are made by geometric shapes.

L: Yes, we chose to use only ten geometric shapes (circle, square, triangle, etc.) as in 'Oh, my hat' or 'tip-tap'. We also often choose a reduced colour palette made of 3 primary colours and one or two additional colours. Also, we often avoid going into too fine a level of detail, which sometimes forces us to simplify forms and to find a particular graphic style, which is often better suited to pop-up.

D: Do you think these constraints you set limit your imagination, or lead you to new ideas?

L: I think that the constraints are most often beneficial for creativity. I see it in my work or in the workshops with children, to give myself constraints of forms, colours, sizes, or even time helps me to generate ideas. I also think that the

constraints give more force to an illustration; they often bring unity, a style that sometimes makes sense because of the constraint. In 'Popville' for example, the graphical style was strongly inspired by the constraints of the form of the book.

D: This is my favourite one because I found that all of your works, such as 'In the Forest' and 'The Ocean', have a lot of details like hidden elements and also you can play with the book on every page. Did you add those details later on?

L: It is during the process. I really like games; I like to play games, board games and video games. When I was a child, I liked to play with books where you have to find something or follow a path, books that included games were exciting for me.

D: How did you achieve the playful reading experience with the book 'Oh! My hat'?

L: For 'Oh! my hat', the idea came in a very different way. We first imagined a graphic game based on geometric shapes (in the manner of Ed Emberley). We originally thought of using this game to make a tablet app. But we came up with a 'classic' book, an activity book in the end. With this pop-up book, we wanted to give a lot of space to the narrative and imagination. We tried to reduce the technical aspect of the pop-up and use it only to play with an illustration that could also be read in two dimensions. The elements in the pop-up are there to put forward the game of geometrical shapes by masking certain forms and revealing others. We later developed the children's app of this book we originally imagined, but this time without a publisher.

D: We noticed that you prefer using multiple techniques, such as combining digital devices with your picturebooks to create your works, so then what is the biggest challenge for you to use these different techniques in your stories? And how do you balance the focus on each of these techniques?

L: Our goal in combining screen and book is to show that these two media can coexist, be used together without one taking over the other. 'Tip tap' is a good example. We wanted the book and the application to be as important as each other

and that there is a real back and forth between two media. The book is not a simple manual, it exists alone as an artwork, and it is essential for playing with the application. And for the video game, we worked to make the interactivity fun while remaining simple and soothing. We did not want the child to be too excited by the screen and the manipulations that can be done. It's good to see kids playing with 'Tip Tap' and moving from book to screen, from screen to book. We did it at a time when e-books were coming to the market, and it was easy to put paper and digital against each other. We have tried to show that both forms can coexist intelligently.

For 'Oh! my hat' and the app 'Oh!', it's a little bit different. We have designed both independently. The link between the two projects is the graphic game (the image construction from geometrical forms). These are two outcomes of the same idea. The same set of geometric shapes gave on one side a book and on the other an application. For each project, we have tried to make the best use of the book's advantages (pop-up, narration, etc.) and those of an application (interactivity, creativity, etc.).

D: That is so cool! Because the project we are doing is looking at gamebooks. Such as those by Bruno Munari, I love his work; he is one of my key studies.

L: Of course. He invented lots of stuff.

D: Yeah, very exciting, it seems like your path has been very smooth from the beginning until now. You met the right publisher.

L: Yes, I am very lucky.

D: It is not just about luck; you have done excellent work.

L: Good ideas, but we were also lucky, we found the right publisher, and it was also at a good time because pop-up books were not really popular. The publishers did not make a lot of pop-up books. I also think that the price was lower then, so it was easier for a publisher who wants to make pop-up books at that time. So it was a good time for that reason as well.

D: Do you think your new book 'The Acrobat Family' is the best one so far?

L: No. I really like it, and also the printer did a really good job. I don't know if it's my favourite, though.

D: How you did the page turns is really smart. You cut different layers to explore the space in the book, and I think this is also quite different from other books. I think your main idea is you use the book like an object to play with space. How did you come up with the idea to cut the pages? This is brilliant.

L: At the beginning, it was Anouck who had this idea of making it like building blocks. So you can use it to make this kind of thing. She made illustrations, and we found this idea of making pop-ups like this. It's a bit like in 'Popville' where some buildings will stay between pages.

D: Even though I can't understand the French, I can clearly see the cat, it seems like she ruined everything, but in the end the story, the cat fixed it. In general, the hardest part for me is coming up with the idea.

L: Yes, lots of people can learn how to make pop-up books. So many pop-up books are published every month, too many, but for me, the most interesting thing is to find something new to tell and to show, about techniques, about illustration or about stories.

D: What is the breakthrough in your new book?

L: Good question. I think that it is not really something very new, I mean, everything did exist already, some parts look like 'Popville', but what I like is that we managed to make everything refined. I think this is the first time that we received the book as a final version, and I didn't find anything to say about it, like something we made wrong, something that was poorly printed, everything is just right.

D: Why did you choose to use this shape to create the book?

L: It is like a tent for a circus.

D: Do you think it is necessary to make a book in this shape? Because I know this cut costs a lot for the publisher. Did they ask you to change this shape?

L: From the beginning, we wanted this shape, a bit bigger, but we decided to make it smaller because the characters are quite big compared to our other books with smaller characters. I think that is our style now to have smaller characters with lots of detail. It was hard to manage the illustration with the cuts when it was bigger. I was really happy to see that it works fine.

D: Your illustration is more graphic, not like the conventional pop-up books, so choosing this style was your plan or did you want to change your style to suit for this kind of pop-up form?

L: We made this design because of the shape of the pop-up.

D: The white mock-up was made first and then based on that white mock-up you then do more detailed design after?

L: For both of these books, the illustration comes first, but it's not always the case, and for this book, as I said, it was Anouck's idea of making those characters like a family. Like a family building something together, they all have their own personality. I tried a lot of different pop-up techniques to make them in 3D, but sometimes I made something complicated, and then we simplified it a lot, for example, this one is very simple, we just cut out the head, but it is enough. One of the characters was the most complicated one because I wanted the leg to move without any paper connecting it behind. Anouck found another technique where there is a margin around the drawing, but we didn't want to do that for this book.

D: How does it feel to be famous for your work?

L: I don't really think about this. I don't know whether I am famous, but I am happy that people like my books, appreciate them and that they understand what I want to do with my work, including how I consider the art of making a book. It's not about me being famous. I'd rather my books be famous.

D: What do you want to explore with your books?

L: I like to think that my books can be the beginning of some description or idea. I like to make simple books which people can take and imagine new books or ideas with, and I hope my books can support the creation of something new. People can bring some new ideas or imagine something new from the book. This is the most important thing for me. For example, the book 'Popville' is quite simple. There is no text. The goal is really to make children think about what they see in it.

D: How do you keep the described story and the space for the reader's imagination balanced?

L: I think it's about simplicity. As for the illustrations, they are for the story that is told. In 'In the Forest', trees are not drawn in a realistic way; they are very simplified to represent a forest without real indication of place or time. So that everyone can imagine a forest that fits their own memories and make their imagination work, which makes the reader more involved in the story I think. It's exactly the same for 'Popville'. We wanted everyone to see their own city because the elements that we have represented can easily be interpreted to match the idea of everyone's own city.

I also think that Anouck's style of illustration is often a game in itself and gives children the idea or the desire to imagine other drawings within the constraints of her graphic style. I think of the illustrations in 'Oh! My hat' made of a coloured form and some black strokes. We made the app 'Oh!' to build on this idea.

D: Recently, we found many new techniques are being applied to children's picturebooks. For example, AR (Augmented Reality) and even VR (Virtual Reality). May I ask your opinions about inviting these new technologies into picturebooks? Will you consider using them in your works in the future?

L: I always find it interesting to look for new ways to look at or to manipulate the book. VR or the AR interests me, but unfortunately, I see very few convincing projects. Technology is often a gadget, a technical feat, which is tacked onto the book without actually being integrated into the narrative. The pop-up, the VR or the AR are tools that can be very impressive technically, but they remain just a gadget if it does not tell any story. They must bring something to the narration. Otherwise, we create a toy and not a book.

I think this is due to the separation between the author-illustrator and the engineer who deals with the technique. Illustrator-writers must seize these techniques, learn them and manipulate them themselves to truly integrate them into their creation.

But I think there are already and there will be a lot of interesting projects in this direction. It may be necessary to wait a bit for these technologies to become more widespread and more accessible to creators.

D: Could you please give some practical suggestions to bookmakers who want to make animated participatory books?

L: My first piece of advice would be not to remain locked in the universe of the book. You have to be curious. Seek other areas of art, design or technology. A good idea is often at the crossroads of two art forms, in the combination of technology with a graphic style, or an artistic concept with the narration of a children's book.

But for me, the main motivation is to make books that I would have liked to have as a child. I make books (or games) for the child I was. So I try not to follow trends too much, not to be too influenced by the books of others. I think you have to create with passion, trusting yourself. If we have fun creating if we find a little childhood joy if we manage to communicate a small part of the dreams and emotions, we had when we were small then I think that we can create a book that will speak to other people.

D: Thank you for talking with us. We learned a lot from what you have told us, and I think people will be very interested in reading your answers. We appreciate you taking the time to answer our questions and look forward to seeing what you work on next.

L: Thank you.

Appendix 3: Interview with Giovanna Ballin, International Relations and Subsidiary Rights Manager of Corraini Edition

Date: 04 April 2019 / 11:00 AM

Location: Bologna Children's Book Fair, Italy

Interviewer: Yang Dong (DY)

Interviewee: Giovanna Ballin (G)

DY: Corraini started as an art gallery?

G: We started in 1973 as a family-run art gallery. The Corrainis were a young couple then. They started the art gallery, and then I think it was a natural development to become a publisher because they met Bruno Munari, a very incredible artist. He inspired them to make the change. He wanted to do children's books, which Corraini had never really thought about doing, and the only thing they were publishing at the time were just some catalogues for the exhibitions they were doing. Munari started to make some children's books and some other books that he made especially for Corraini such as the series 'Block Notes'. They are little books, only six by 12 centimetres, which all had the same type of cover, grey with a hole somewhere; the design aimed to make you curious about what was inside. In Munari's books, there is always something that is an invitation to go and do something with your creativity, with freedom. Because, for Munari, there are no rules, but you can give suggestions, where to move things, and where you can do something, but no hard rules. He is telling you that you can do this and it might be fun, but it is up to you how to proceed.

DY: The Corrainis were very lucky to meet Bruno Munari, were they also artists?

G: No, they were very keen on art in general, and Marzia Corraini was a teacher at a school and running the art gallery at the same time. So it was not the primary profession for them; it was just on the side at the beginning. Then it became severe, but at the beginning, it was only an art gallery they did out of interest in art. Later it became like a challenge, for other artists who had never done children's books. Corraini would ask them 'OK, why don't you try to do children's books as an artist?'. It started like that, and then Corraini also started to republish a lot of previously published books, because they liked some of the books that they had found such as those by, Luigi Veronesi, Enzo Mari and obviously, Bruno Munari. A series of Munari's books were from 1945, they looked a bit vintage, but the ideas and drawings were so simple that the books were ageless.

DY: Corraini went from being a gallery to being a publisher, and also you talk about how their meeting Bruno Munari gave them the idea to publish picturebooks. When I look at the books from you, the primary purpose of the books seems to be to make the reader happy, just like Munari would have done.

G: You know it was an impression I felt from the beginning, in every country. Because sometimes we would be at a book fair selling books and it was amazing because when people opened the books, they started laughing. It was very nice to see their reactions to the books.

DY: Your book from this year 'The man in the moon' is a very sweet and lovely idea also.

G: Also very topical, because of the problems of the wars going on right now.

DY: I was wondering, what is your standard for choosing authors or books to publish?

G: We don't have rules. People come and show us their books, and if we feel it is something for us, we try to publish it. Sometimes it takes more time, for example, in the case of the first book by Suzy Lee. She came to Bologna about 20 years ago and said to us that she had gone to all the other publishers. They said it was too difficult to make her book, but we saw the book, and it was so impressive and so new and so smart. So even though it was difficult to make, we saw something in

it, and we said OK we like it. And we don't worry about how much it will cost because of the special binding, or how it has no colour and is just black. We loved the book so much because it was so fresh and so different so we thought we should do it.

It is very difficult for us to see books, especially during fairs, so now we don't do it anymore because we can't see the project properly at a fair like that. And I think it has never happened that I can say yes immediately. So it should be something, obviously. One part that is very important to us is the images, the pictures. But we don't have rules for pictures and the format. Obviously, when we see a book, and we love it, we also need to spend time on it, to face the technical and economic problems, because, unfortunately, we are a publisher, we need to see the economic side of things.

Recently, I have seen a problem that younger illustrator sometimes want to do something too complicated. Sometimes a simple story is good enough. But most of the time, people are afraid the story is too simple, so they make it more complicated. However, sometimes a strong project doesn't need to have things in it that are too complicated. Unfortunately, we have to consider the cost. We also print in Italy so the printing is expensive and we need to be aware that the book must be able to be sold, at a good price on the market. Because some books are very beautiful, but I know for children's books if it is not unique, we need to control the price to 20 euros at maximum. 20 euro for a children's book is already a high price. Even though we have some books that cost, even more, they are very special. Some of Munari's books cost 30 euros because we use different paper. We print in Italy so it can be very expensive because the paper is very good and they put in a lot of effort.

So for us, there are no rules, just a feeling that we think it can be good. Usually, we don't have so many books with lots of text. We prefer more pictures, but it doesn't mean we don't like text. For example, the book about the whales obviously should have text because it is explaining about whales. The story is scientific. Other books don't need to say too much.

DY: Yes, just like ‘The great battle’. I read the Italian version the first time, I can’t understand the text, but the pictures already make it clear.

G: Yes, you don’t need it!

DY: It is a brilliant story. When I shared with my friend, I said this story is so simple, and the author must be so confident about his idea.

G: I think it is the power of the picture. Pictures can make their own point to the reader. ‘Nella notte buia’ was a book that was conceived in 1956. It only has a few words, but when you open the book, it tells you it was night because it’s black and it’s dark. So you don’t need words to tell you. It was Munari’s thinking, and I agree that the material is stronger than the words. If you have ever seen ‘Illegible book’, it’s a book without words. It was made of different shapes of paper without words, a visual story. It is an example to show you the idea that you don’t need words too much.

DY: That’s so true. I knew you published the book about the O.P.L.A. project, which is a book introducing the artist’s picture book, also Bruno Munari’s books are artist’s picturebooks, what do you think the artists’ picturebook? Are they important for society?

G: It’s very important. The O.P.L.A.(Oasi Per Libri Artistici – Artistic Books Oasis) is an incredible project that we started 25 years ago with Merano City library. We proposed to them to do an archive, for artist’s children’s books. And it’s amazing, we just started, we never thought it would be like 25 years and it’s incredible. They have an incredible collection at the moment and every twice a year they do a workshop with artists completely different artists, like photographers and any other like writers, so it is nice because the picturebook is very important. After all, it is the way to express themselves and especially the artists’ picturebooks.

The library has a very good collection. They also have Munari’s original drawing. it’s very difficult to find artists picturebook altogether.

DY: Then, what is the difference between artists picturebooks and conventional picturebooks?

I'm not making any difference between artists and illustrators. People may think in some way illustrators are just doing the illustration but not the complete project of the book, but for me, it's their work, so it's art pieces.

DY: But your books are very different compared to other books from the style. Very artistic.

G: You know, sometimes just because our authors are artists, like Fausto Gilberti, he is a painter, and he has never done children's books before. He has a child, and he wanted to do something for the children. It's the same with Bruno Munari.

I think most people know Munari for just one topic, some people know Bruno Munari is great children's author, some know he is a great designer, or he's a painter, maybe now few people start to be aware that he is a classic artist. The first children's book he has made was for his son. And it was in 1945. So this may be the only thing that why our books look so different, because the authors' backgrounds are not doing illustration. They are artists and skill on other topics like a painting. Yes, it's the only different, because they are not just doing picturebooks, the skills on other things. It's incredible; sometimes architects also want to test themselves with children's book.

DY: what do you think Bruno Munari's work. What do you think is special about his work?

From a personal point of view, I think it was that he had the idea that nobody has to have rules. And in some way, he wanted to improve the people to be more confident and to do what they wanted. I think most of the people, especially when you are grown-ups, we are always afraid of other people's comments or opinions, maybe the negative feedback on what you are going, so there is a sort of censorship because you are not completely free to express yourself. Also, you are afraid of what people think. Maybe you think, ok, I have to do children's books, so it should be with colour, number of pages, should be cats, rabbits. I think why Bruno Munari was incredible that is because there are no rules, you can just use the material to make a book, and you have only to feel relaxed, confident make your creativity just to be open. And became more comprehensive and freer, I think these were the main point. The 1945 series is incredible, nobody needs to

tell you, but you will follow all those small pages. Children are learning when they read, what is big and what is the small and the smallest, small can inside the big. So they are learning about the size with the different positions in the pages, all about the discovery. Because every time you open a small window, you are discovering. Children are curious, when they see a hole in your book, they ask ‘what is going on?’, so this is amazing.

DY: I found that when I read his articles, he has a methodology which is ‘play with art’, he is very playable.

G: You are completely right. He is serious, but in some way he is light. He was very playful person, very ironic. If you see some art pieces, you can understand why he is very ironic. Because he selected very different techniques and he played.

DY: Yes, I was very curious about his working process, and this book ‘In the studio with Munari’ I bought, showed me ‘he just plays and find the results through the play’.

G: It was amazing to see him in the studio. This one you can see was his studio. It, unfortunately, doesn’t exist anymore but it was beautiful because there are a lot of things he collected were everywhere. And from them, he started working and playing. Also, in the book, ‘The sea is a craftsman’. He is talking about the sea can be a designer, an artist, because if you throw something into the sea, it gives you back a different kind of thing because it is working, with the sea salt, the humidity and everything. So it is something like he has a very free mind.

DY: I know you focus on researching on him, because every year I can see a new book about him. So, I was wondering is that your main project?

G: You know we have always been thinking of doing a complete catalogue about him, but it is actually very complicated to do, because we know we have a lot of material about him in our collection. I think we should do a complete catalogue, but it is very difficult because it needs a lot of time. But it is one of our goals.

DY: I noticed the book ‘Nella notte buia’ published by an American publisher, did you sell the license to them?

G: We used not to do license, but now we do some licenses because we print in Italy and especially in the case of the collection this one we are aware that we can not give any reasonable schedule to do the book. So we decided to do licenses. And it is co-edition. In this case, we print the book in Italy, and they buy their own publication. So we follow everything we think is good.

DY: So before them, they already a lot of publisher approach to buy the copyright.

G: Yes.

DY: but you didn't sell it?

G: No.

DY: Do you think Munari's books are too expensive to produce and to sell?

G: Yes, they are very expensive. But I think that you cannot promote them like just cheap children's books. They are high-quality children's books. They should do two different markets. We have parents who buy one copy for themselves and one for the child. We also have a lot of designers and artists buy it. So there are two markets, you have to promote them in different ways. But, yes it is expensive, I think right now we are selling 'Nella notte buia' for 30€, this is amazing. The 'I Prelibri', it was started to print in the 70s by Danz. It was something like a dream to be able to do it, it was so expensive, and the Italian market is difficult because it is a small market. But 7 or 8 years ago we decided that we should print, the first edition we made just 1000 copies, but it cost 100€, that is like jewellery, but we want to do it. And it was amazing because we sold so fast. We look at each other, and we said: 'Finish? Are you sure? Do we get lost? Maybe the printer still has some books there that we didn't find?'. It was something surprised us. Last year it went under to 65€. We are not able to supply all the orders that we have, because it is very complicated to do it. There are 12 different artisans, and every year we should do safety tests for children, it takes two months to do it and costs a lot. But we have a list of people waiting for it. For me it is amazing because Italy is not a rich country, but people want to buy something special, 'I Prelibri' is incredible.

DY: When I talked to Katsumi Komagata, he bought it in America, he said that book inspired him a lot when he saw a child play with it. He got inspiration; he can use the book as an object and let the children play.

G: You know the last cover was designed by Katsumi. It was strange, we expected something more Katsumi style, but he was very humble, he didn't want to change it too much from the big master. So he was a little bit afraid to do something so different that people recognise his style and not Bruno Munari, it was embarrassed to do it. Because you know in the middle, he has to make something different that looks like Katsumi but Munari, but it was good. I like it. It was very difficult for him to do it.

DY: I also notice that you did lots of non-fiction picturebook with very nice layout design. Can you tell us some of those projects?

G: There is an amazing book, 'Goodbye oil', a project we did with the Canadian centre of architecture. It was 12 years ago. An exhibition in CCA, the centre of architecture in Montreal. It was a big exhibition about the oil crisis. It was a very serious matter because they wanted to make the people aware of what happened in the 70s and be more conscious they can happen again. So it was very impressive, but they also want to give some notions to the children. We found one, a very brilliant artist, but she wasn't able to do it. She got panic because it is a very serious matter, but we needed to keep moving because the exhibition was coming very soon, so we had a very tight schedule. We found another illustrator who works with us a lot, and she did it in less than one week. It was just inside the catalogue. We always asked them why don't make it into children's books; finally, after ten years, they decided to do it. So we have to put something at the time alternative energy and this great book so it children buy in between.

And now we are working on another amazing project. It is a project from moss, an architecture studio from New York. It is a book about the architect. You can find very famous architect houses with all details in the book. So this is a combine with children's book and architect. We don't want divide too much children books, art books and obviously there is a natural division but sometimes we do

something in the middle. Sometimes when we do artist book, we try to do it in a different way.

DY: Now, I am starting to understand. You are doing something in between and trying to expand into designing to children also.

G: Yes, it was the same idea as the series about art. You have to find a way to make the people and make the child go inside the museum, not so afraid. So it is going to get very friendly but details, information about why Jackson Pollock was doing this kind of thing. There is a reason why. So it very approach to make the people more confident to go to meet and not to be so afraid about something they don't know. Because e most of the kids think that the peo0ple say you don't understand anything about art. Because you are kids but believe there is a way to approach.

DY: You must have a very skilful book designer and visual artists to organise the information and make it clear and straightforward for people to understand. Do you have your design department?

G: Yes, I think its something natural for us, to make books as clear as possible. Sometimes we have also some books that we should do in a particular manner like a catalogue for an exhibition, so we cannot change much, we can give some advice. Because unfortunately, you are not able to just do it, we should some way not our project we like some way to personalise to give a little bit Corraini allure. It's hard for us to stay apart just do it, so sometimes we need to put some soul inside on each project.

DY: Who are the head of design department?

They are the same person, they do children's books, artists books, design books. They are very flexible.

DY: I think this team is amazing because all the books have a freestyle.

G: Yes, we tried to. I think this is very good point to have no restriction. So you can think, to do the children books and the same time should do anything else. Because you have all the means and you can use it maybe just modify it a bit

DY: how many people do you have?

G: We have I think twelve people. So the graphic design department, they are five. 2 people for accounts, 3 for sales, only me for the licencing, um yes. Then some other people helping us with accounts warehouse. You should come to see. The mountain is beautiful.

DY: definitely, what do you think the character of your team is?

G: What I'm thinking? It's difficult, I think it more or less. I think that most of us are quite open, open-minded. Not all of us. It's not a matter of age, because sometimes I feel more open than maybe very young colleagues, I don't know.

DY: so everyone can have a voice.

G: Yes, and you know the good thing is that we can share our opinion to each other because it's important. Everybody has a different point of view as I told you before. Italy has a point of view. I have another point of view, my colleague that following international has another.

DY: because the range for you book is very wide. Food, architecture, designer, everything. How do you choose the project that you want?

G: It depends on the project that they propose to us. Because sometimes we maybe never think about, we don't think exactly ok. Now we do a book about brain. Never. I might happen that maybe I don't know the reason exhibition, so we have to work this. But it's about we find something good project, and we go.

DY: I also saw you have a very high standard for the printing the material, every book the material is so nice

G: Yes you know we are very careful because I think the people can recognise our books because of the quality so that's why we don't usually want to give the license because the material sometimes is not because the printer outside like in Chinese is not good, I would never say that, because I've been to Shanghai in November and I went to Beijing seven years ago, and it's changed so much, the quality is improving a lot, the quality of the material and also the project are

outstanding. But the problem sometimes is the material, I've seen the 1945 series they've sent to us very properly, and we say maybe you have to improve to change the colour but the problem, the paper is never like ours. Also, the result can be different. It's not because they don't want to spend money on different paper, they don't have it. It's a problem also for us now to have sometimes the paper because also you know there is a crisis or so on the paper mill and they are not producing so much. So sometimes for special paper we should book in advance we need to forebook a special paper that used to be on sale every time. To have just the paper, you have to wait a month and a half.

DY: Expecting making books, you also run a lot of workshops and exhibitions and do design books and children's books, right? You are too busy.

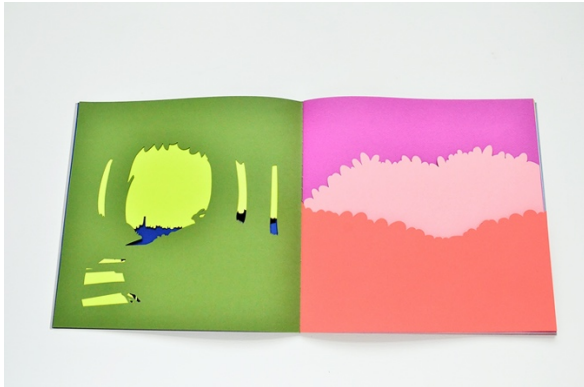
Yes, I will need a couple of assistants.

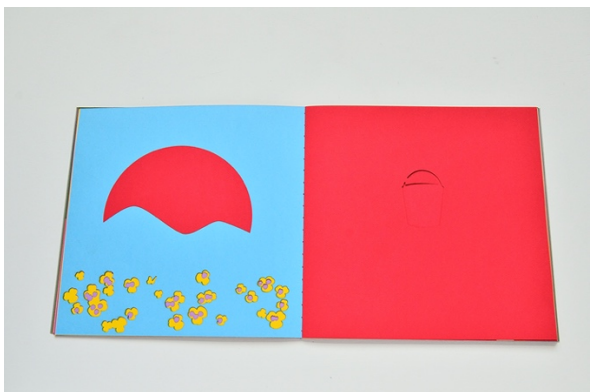
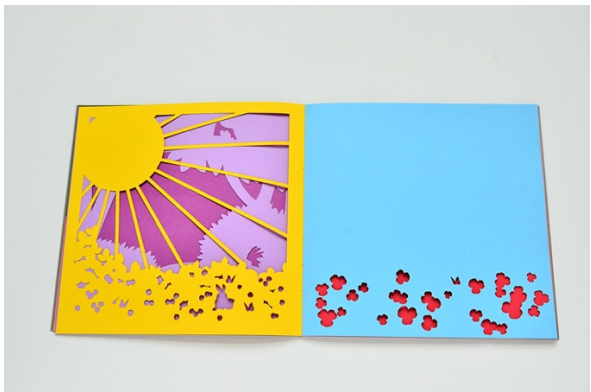
DY: so I think I just take too long for the interview, we really appreciate your time. I wish you everything goes well.

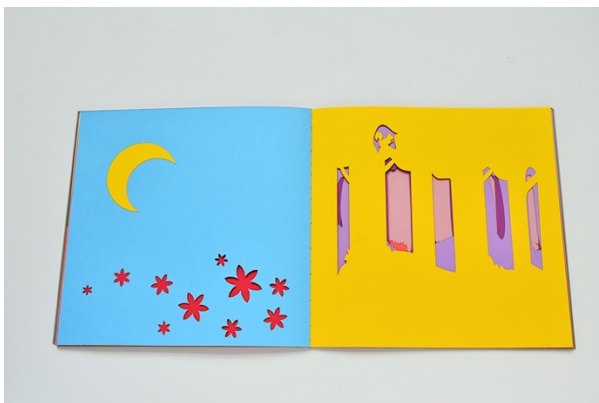
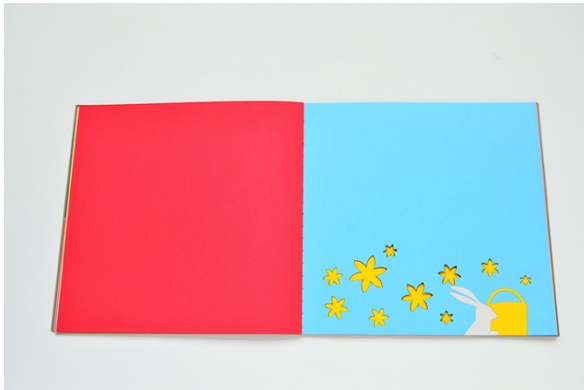
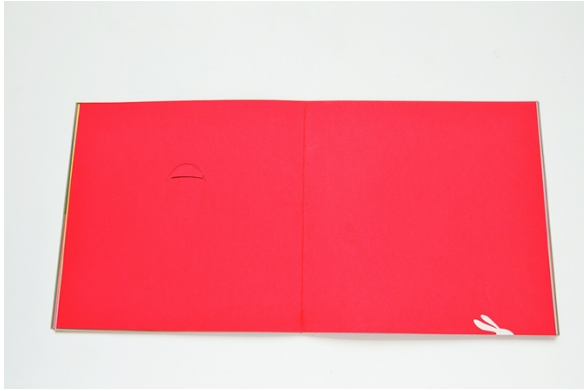
G: My pleasure.

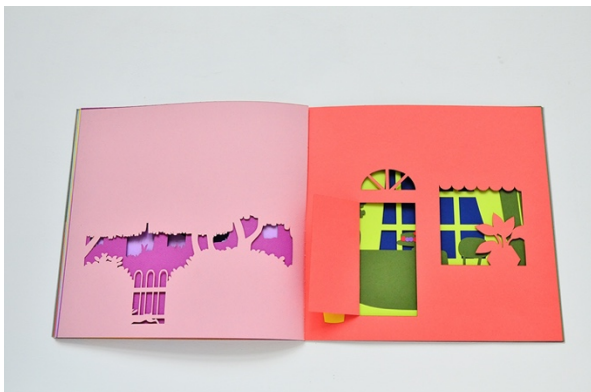
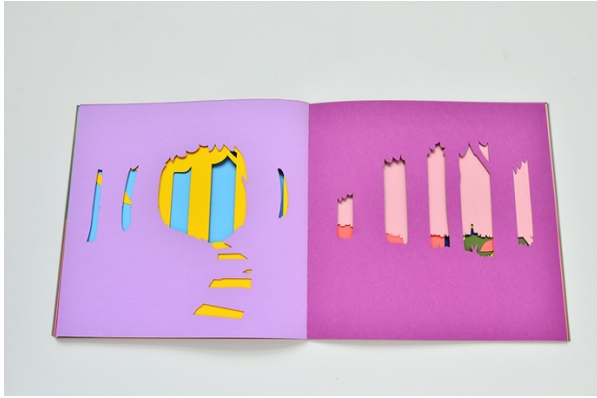
Appendix 4: Photographic evidence of artefact created – The entire book of *Blueberry Pie*

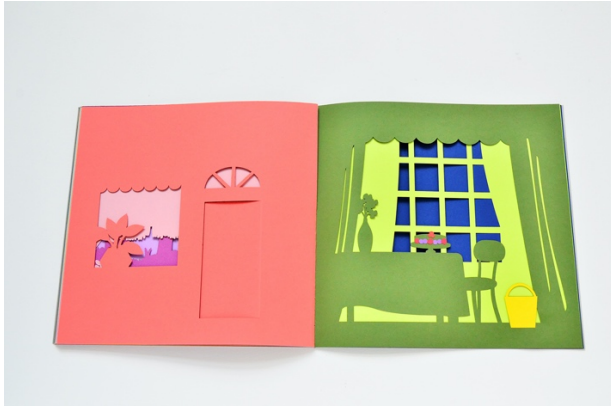


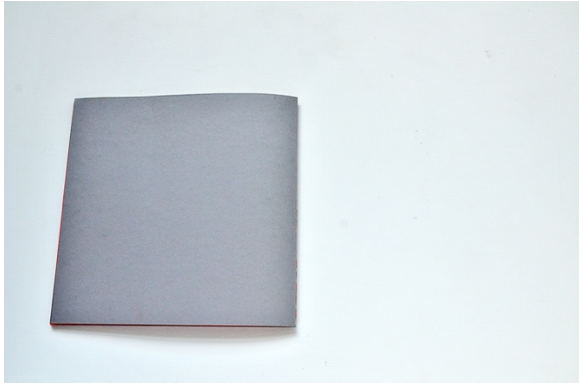
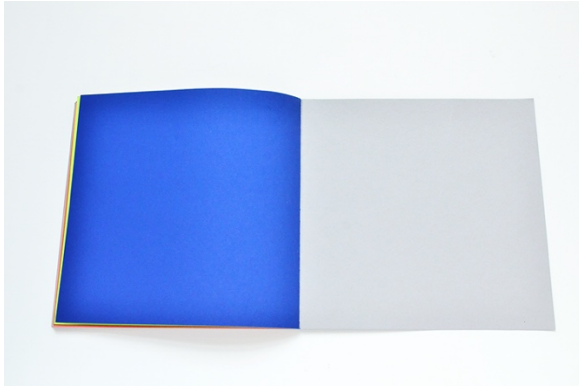




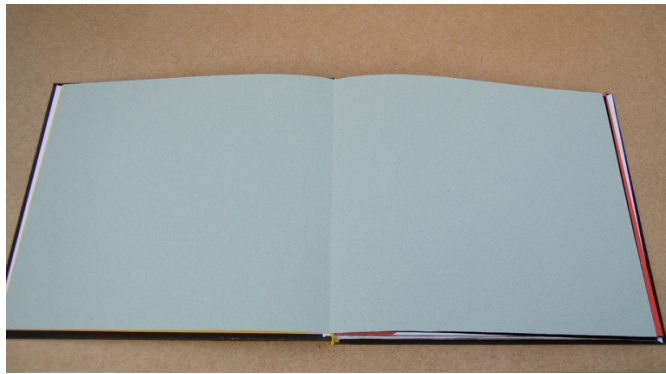




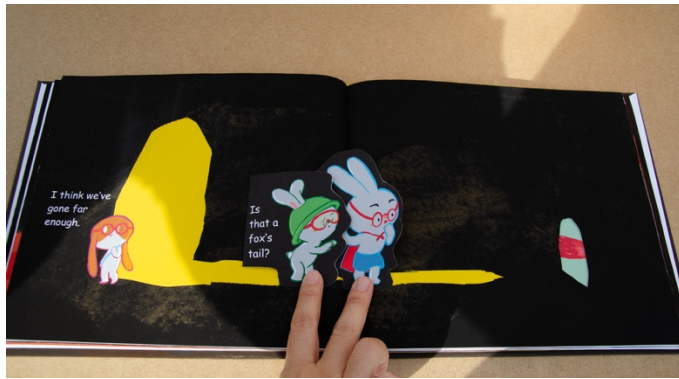




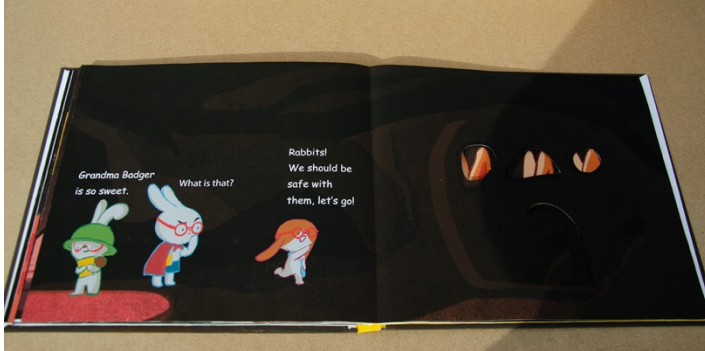
Appendix 5: Photographic evidence of artefact created – The entire book of *Once Upon A Hole*











Grandma Badger
is so sweet.

What is that?

Rabbits!
We should be
safe with
them, let's go!



