

# **Hybrid Books: Establishing a Bridge between New Technologies and Print Media**

Felicity Smith

Submitted to the Communication Design  
department of Paris College of Art.

In Partial fulfillment of the requirements  
for the degree of Bachelors fo Fine Arts.

December 10, 2018

## Table of Contents

Abstract .....	3
Introduction 1.0 .....	4
Introduction 1.1 .....	8
Defining Parameters .....	11
Traditional Book 2.0.....	15
Traditional Book 2.1 .....	20
Electronic Book 3.0.....	24
Electronic Book 3.1.....	29
Hybrid Book 4.0 .....	32
Hybrid 4.1 .....	36
Conclusion 5.0 .....	39
Conclusion 5.1 .....	43
Interview .....	45
Figures .....	47
Bibliography .....	52

## **Abstract**

Reading traditional books forms important developmental neural circuits within the brain.

Historically this has allowed individuals to establish necessary skills for communicating and interacting within society. The advent of the digital age has challenged the accepted standards for how people learn through the use of different mediums. The change within how society interacts with the content presented within print objects due to the mass reliance upon digital technology has altered the reading brain. This in turn has influenced the growth of important neural circuits for the acquisition of processes like empathy, analytical thinking, and deep learning skills.

The hybrid book offers a solution combining both analogue and digital tools to enhance differing reading experiences. The intent is to create immersive content that will increase overall understanding of the subject for each individual. This thesis will look into neurological processes developed in childhood through traditional reading, the changes that reliance upon technology has brought to the reading circuit, and what this means for society.

## Introduction 1.0

One of the greatest struggles of humanity has foremost been the struggle to communicate. For centuries people have behaved according to social constructs that society has collectively created for stability, functionality, and expression. To create a sense of social cohesion within any given institution, body of people or society; communication is crucial. As humanity has evolved over time so too, have the methods of communication. Within the modern world, digital technology is an important tool of communication. Digital technology affects the way the brain is structured<sup>1</sup>, how people remember information, and the methods used to share it. The realm of digital and analog allows for the freedom of creative expression to enhance user experiences. It presents opportunities for strengthening forms of communication with new technology will allow people to explore the world in a more immersive, clearer and expressive manner.

Today the technology has evolved to a point that instant communication globally is expected. The means of expressing emotions, thoughts, and feelings are available not through just words, but pictures, emojis, gifs, and in more advanced technology one can even begin to live other people's experiences through means of Virtual Reality. The simplest objects were created by a functional need and an original inventor to appeal to people, to communicate their purpose to the user. One form of a simple object used to communicate is a book. Books use simple elements that act as communication devices to convey a message; the cover, the size, the shape, the font,

---

<sup>1</sup> "How Technology Is Changing the Way Children Think and Focus." Psychology Today. December 4, 2012. Accessed September 24, 2018. <https://www.psychologytoday.com/us/blog/the-power-prime/201212/how-technology-is-changing-the-way-children-think-and-focus>.

and the content all work together to express this. Today there are books for children that sing, have pop up interactive characters, tactile properties and have apps that enhance the story. In factories, user manuals are digital, so workers can pull up interactive 3D renderings of mechanical parts. People have invested in e-books that allow them to store hundreds of books on devices that weigh no more than a slim paperback book. These e-books come with elements that allow you to instantly define words, highlight passages, and play videos. The realm of digital and analog allows the freedom of creative expression to enhance user experiences.

There are three types of communication; verbal communication which involves listening to the speaker and understanding what they are saying, written communication in which a message is read, or nonverbal in which one understands what is expressed through observation and inference. In the collective time since print publishing started, there have been over 130 million books published. A dedicated bibliophile might get through 6,000 in a lifetime. That's 6,000 books containing the thoughts, ideas, and values that authors have meticulously shaped, organized and structured into "coherent strings of connected words, printed on paper and bound between covers."<sup>2</sup> But with the rise of the digital age, the traditionally accepted form of a book has started to morph into a dynamic entity that is neither linear nor static. Traditional reading has become an archaic form of entertainment that should be transformed into an engaging dialogue that will appeal to a consumer culture that is moving towards a preference for fast-paced, multi-formatted streams of information. This information must be presented in an engaging manner that will hold the public's attention. The lack of deep thinking and short attention spans stems

---

<sup>2</sup> Rich, Motoko. "Hybrid Books From Publishers Like Simon & Schuster Add Video and Web Features to Reading." The New York Times. September 30, 2009. Accessed October 10, 2018. <http://www.nytimes.com/2009/10/01/books/01book.html>.

from the instant gratification culture that arose from the creation of the web and social media. Print reading requires deep concentration and patience that is not supported by today's cultural standards. Publishers have responded to this need by creating archives of text, images, videos, and sounds that will augment the traditional book. In 2009, Independent publishing house Simon & Schuster worked with a multimedia partner to release "vooks" that intersperse short video clips to accompany electronic text.<sup>3</sup> This is one of the first forms of a multimedia and text-based books released on the market. In September of the same year, the creator of the television series "CSI" by Anthony E. Zuiker released "Level 26: Dark Origins". While this novel was released in three forms; a printed version, ebook version, and audio version it was supplemented at the time of release with a website where readers could watch videos that would enhance and add to the plot.<sup>4</sup> Projects like "Level 26" and "vooks" are a step in the right direction to becoming hybrid book; having multiple different mediums by which information can be accessed both digitally and analogously. The concept of Hybrid books is becoming increasingly more and more popular, almost becoming a necessity to attract modern readers.

To reach modern readers publishers are beginning to understand that the traditional structures and format no longer work to captivate their reader's attention. In traditional formatting, the author uses carefully constructed words, and a fixed structure to convey their message to a reader, in the age of technology this linear thinking does not connect well. Social media means that people have a platform to interact and express opinions and create dialogue. This concept of

---

<sup>3</sup> Nerney, Chris. "'Vooks': The Future of Book Publishing?" – Adweek. October 01, 2009. Accessed October 10, 2018. <http://www.adweek.com/digital/vooks-the-future-of-book-publishing>.

<sup>4</sup> Rich, Motoko.

creating discussions is one that is now deeply embedded in the modern culture, people expect to be able to have a voice. Publishers recognize this and books are changing to accommodate that. For example “The Amanda Project” released by Harper Collins invited readers to discuss online what was happening in the book. As the series continued “comments were incorporated into minor characters or subplots.”<sup>5</sup> This trend started in 2009, has only increased as society has become more involved with social media. In 2016, Nickelodeon illustrator Steve Lowtwait and Facebook employee Michael Smith teamed up together to create Hawk Funn a character with whom readers could interact with on social media. A profile was created on numerous social media accounts, and followers (readers) would like his photos, retweet his posts, and leave comments on his profile page that the character would respond to. This mixture of fiction and social media was dubbed ‘social fiction’; where a story was told through the actions of a character posted online and readers actively participated in the story.<sup>6</sup> It is no longer acceptable to just publish traditional books, people expect to be able to have at the very least a print copy and electronic version. In a society where information is constantly being received and transmitted readers expect their books to also provide more. A cache of extra information is expected with the text; links and documents with the author’s research, videos conveying feelings and expressions, along with auditory elements that set the tone and mood. Technology is being used in tandem with the printed word to enhance written communication.

---

<sup>5</sup> Rich, Motoko.

<sup>6</sup> Thorbecke, Christiana. "Woven." Woven. September 2, 2016. Accessed October 10, 2018. <https://woven.96problems.com/>.

## Introduction 1.1

For the purpose of this text, a traditional book refers to a physical object that has text, images, and illustrations printed on paper. With the pages bound together with either a soft or hardcover.

An E-book is a digital or electronic book that is formatted into a file that can be read on an e-reader device (kindle/nook) or app. A Hybrid book is a physical book that is printed on paper but has technology incorporated to enhance the print text.

The three books that will be used as reference points and examples to explain the concepts of traditional books, ebooks and hybrid books are; *Peur du noir moi* (a children's book) by Magali Le Huche, *The Diamond as big as the Ritz* (a work of fiction) by F. Scott Fitzgerald, and *AssembleAR app* collaboration with Ikea (a user manual) by designer Adam Picker. Each piece is represented in three different forms; a traditional book, ebook, and hybrid Book. By comparing the different genres across the three mediums it will clearly show how each book functions.

The Children's book *Peur du noir, moi?* Is a French book published by French Independent Publishing Company Albin Michel. The story is about a little girl named Clara. She wakes up thirsty in a dark house; her bedroom, the kitchen, and the living room are full of odd, noisy and disturbing shapes. The story explains the anxieties of the night through the use of alternating on and off, scared and unafraid. Figure 1.1

Melville House's Illuminations republished *The Diamond as Big as the Ritz* as a part of their new collection. The protagonist John T. Unger goes with a wealthy classmate to Montana for the summer, where he discovers that the family is not just wealthy, but rather they own a mountain that is a solid diamond. The family will go to great lengths to protect this secret. While there he meets Kisimine, the daughter of the family, who is his only hope at escaping the same fate as the other unfortunate guests who visit the mountain. Figure 1.2

Designer Adam Picker's app; *AssembleAR app* is inspired by IKEA's current manuals and their new app IKEA Place. The application combines the original manual that comes with illustrations of how the furniture is to be assembled and uses Augmented Reality<sup>7</sup> to enhance the instructions.

Figure 1.3

Three different types of books are used to show the difference between the traditional medium of books, the Ebook, and the Hybrid book because each of them portrays different aspects of how technology can be used to enhance books and why that is important. The first example is a child's book because it is the medium that most clearly shows the impact between different types of book formats within the developing brain. The second example is a functional piece of work because it is the best medium to reinforce the neural circuit that already exists in the adult brain, through the use of imagination and creativity. The third example of the instruction manual is

---

<sup>7</sup> Definition: An enhanced version of reality where live direct or indirect views of physical real-world environments are augmented with superimposed computer-generated images over a user's view of the real-world, thus enhancing one's current perception of reality.

Admin. "What Is Augmented Reality (AR)? Ultimate Guide to Augmented Reality (AR) Technology." Reality Technologies. October 04, 2018. Accessed October 26, 2018. <https://www.realitytechnologies.com/augmented-reality/>.

because it's a practical application of the use of different forms of learning through reading and the book as its method of sharing knowledge.

(Figure 1.1      Figure 1.2      Figure 1.3)

## Defining Parameters

To explain the role of traditional books versus electronic books and how they are similar to and different from hybrid books. The phrases Passive Expressive, Neutral Expressive, and Active Expressive have been defined to highlight the differences between each of the mediums. Passive Expressive is when the reader acts upon the object. When someone reads a traditional book, they pick it up, turn pages, and perhaps use a physical bookmarks to note their location. All of these actions physically manipulate the object, but do not effect the content within the book. Neutral Expressive is when the reader and text are in balance, each with equal interaction. There are set limitations to how much a reader can customize the object, and within this customization the book is giving its own interpretation. Active Expressive is when the reader can interact with the content in multiple ways. The “reader” or user has multiple controls over how they experience the content; this can be through non-linear story telling, physical sensations, or interactive visuals.

The physical object of a traditional book implies that the way a reader interacts with it is finite. The sequence of pages is fixed, and depending on the culture the book will be read either left to right or right to left. This means that the content is experienced through time in a linear fashion. The motion of turning pages to discover the next section of text invokes tactile perception. The tactile sense is the first to develop in humans and last to fade, even after sight and auditory processes have diminished. “Active touch, also described as haptics, is when the individual

deliberately chooses his or her actions in the exploration and manipulation of an object.”<sup>8</sup>

Haptics is used by readers to explore books, but on a very basic level. At the base this sense deals with touch, pressure, and vibration; the first two are most commonly found in print base books. The visual senses are activated by words and images. The optic nerve carries the signals from the eye to the brain, which interprets the shapes and configuration to form visual images.<sup>9</sup> These actions are Passive Expressive; they affect the object (the book) but not it’s content.

An electronic book allows for another sense, in addition to visual and tactile, to be included: auditory. The auditory sense is how people hear things; nervous receptors send signals to the brain which interprets these signals as sound. Sight is the sense we use most often, but hearing is, for most people, constant. There is always noise around, even silence can be different. Humans use sound as a way to communicate a multitude of different emotions; displeasure, anger, concentration, confusion, and so on. In a book, sound can add an extra layer of communication to convey meaning and emotions to the reader. This is an interpretation of the mood or tonality that the book provides for the reader. Audio books frequently include music or other emphasizing sounds. Sometimes they will include simple sound effects, such as doors slamming or even footsteps. An audio book is a version of an ebook; the reader acts by turning the audio on or off, deciding the volume limit and placement or location within the story line. When the narrator speaks the inflection and tone of voice provides an interpretation of the text; that is the book

---

<sup>8</sup> McLaughlin, M., Hespanha, J., & Sukhatme, G. (2002). *Touch in virtual environments: Haptics and the design of interactive systems*. Upper Saddle River, NJ: Prentice Hall.

<sup>9</sup> Argosy Publishing, Inc. "The Five Senses." *Visible Body - Virtual Anatomy to See Inside the Human Body*. Accessed December 04, 2018. <https://www.visiblebody.com/learn/nervous/five-senses>.

acting because it influences how the listener views the story. In Neutral Expressive the reader and text have equal weights of interaction, both affecting the reading experience.

The Hybrid book is a combination of some form of physical object that has the basic properties of a book; pages, words, images and takes these passive expressions and combines them with technology to create immersive books. This could be achieved through adding hybrid qualities to background elements which help explain concepts, not major elements. A good example of this would be using a 3D holographic projection to show how the spell “leviosa,” from Harry Potter works. The spell is used to make objects hover suspended in mid air. In the book the students first learn this spell in class by trying to make feathers float. Adding an element such as this would make the world of magic more tangible to the reader. A bad use of a hybrid enhancement would be to show a character portrayed by a real life actor. This creates distance between the reader and character. Often when reading people tend to envision parts of themselves in characters, this helps readers empathize and become engaged in reading. While engaged in reading the descriptive language used by the author will help the reader create their own world . This world comes from the neural pathways stimulated by creativity and discovery giving people imagination. This is a form of Active Expressive. The reader can interact with all their senses and they control which senses to engage.

The purpose of a hybrid book is to help improve the neural circuits that allow for deep reading processes, while using the new pathways that are forming from the digitalized world to make this possible. Without inherently understanding how technology works people would not be able to

use a hybrid books to their fullest potential; using different mediums of technology to create a physical object that is a fluid being between an analogue object and a digital one.

## Traditional 2.0

Since man first appeared there has been a multitude of “disorganized signs that could represent different meanings to each man using them.”<sup>10</sup> Until 30,000 BC there was no consistency in how ideas were conveyed. The first and most well-known use of primitive communication are the cave paintings; drawings depicting scenes of primitive life on cave walls. Before written language, there was only the oral tradition of passing down history, information, and morals. However, this method was restrictive as many people lived within clans or did not speak the same language, thus the information passed down was not widely shared. The advent of the written language and the book was an important step in the development of communication as it allowed for knowledge to be preserved and shared without needing to be remembered and passed down. Medieval books were created in velum and written by hand, making them very precious and rare. Restricted to the nobility and religious communities, illiteracy among the majority of the population, who were poor, was very high. It wasn't until the 13th century that books became a means to share knowledge and not just a form of worship within religious sectors. Following this, the next influential movement (in the West) was the invention of the movable type with Gutenberg's printing press. This revolutionized the way books were made, combining ink, paper, and a press meant that books could now be produced in quantity. This allowed the poor to have access to knowledge and education that before would have been restricted to the wealthy. Since 1837, when the telegraph was created by Samuel F.B. Morris, and 1867 when Alexander Bell invented the telephone the technology used and developed to help people communicate faster,

---

<sup>10</sup> Schmandt - Bessarat, Denise. "THE EVOLUTION OF WRITING." *THE EVOLUTION OF WRITING*, January 25, 2014, 1-15. Accessed October 3, 2018. <https://sites.utexas.edu/dsb/tokens/the-evolution-of-writing/>.

and easier has increased exponentially. Today there are post offices, radios, TVs, cell phones, and the internet; all objects that serve to aid humans in their quest for greater communication.<sup>11</sup>

Traditional books are tactile objects that require the reader to interact with the object in order to get information. The weight, the feel of the pages, the scent; all contribute in reaching the reader's' senses and engaging them in the text. Books allow readers to form emotional connections to not just the author's world but the physical object of the book itself. Books are passed around and shared, the knowledge within them sparking debate and conversation.

Memories are associated to the physical object; rereading Lord of the Rings by Tolkien brings back feelings from adolescent years of fond moments of bonding with the family over debating if Legolas and Gimli were lovers or friends, the illustration of the Doors of Dorin bring back feelings of anticipation and sadness. The author creates an immersive world for the reader to discover, leading them through the hero's journey, describing in detail the surroundings so that the reader can imagine the world the author has created but in their own personalized way. This is an important part of reading: imagination. Reading allows for the mental development of imagination. Controlled by the right side of the brain, reading helps create neural pathways that stimulate creativity and discovery. While books may provide knowledge the most important way they help readers is by improving their mental capacity through "opening [the] mind to new possibilities and new ideas helping people experience and analyze the world through others' lives."<sup>12</sup> Stories impact the way people empathize, connect and understand. Reading is just like

---

<sup>11</sup> "Technology in Our Life Today and How It Has Changed | Updated for 2018." Aging In Place. November 16, 2018. Accessed November 11, 2018. <https://www.aginginplace.org/technology-in-our-life-today-and-how-it-has-changed/>.

<sup>12</sup> Rich, Motoko.

practicing a sport, with time and practice it becomes muscle memory, and just as an athlete must use their muscle so too must the reader. If people do not use the neural pathways that have been formed, then they will lose those skills. That is why it is often harder to read a complicated book after not having read for a long period of time. With more time and more complex language, the pathways become stronger and expand, meaning there is greater room for actions such as critical thinking. What people read will also impact how the neural pathways form and what skills are learned from the text. Fiction is especially good for strengthening imagination. Lead Emory researcher Gregory Berns stated, "at a minimum, we can say that reading stories—especially those with strong narrative arcs—reconfigures brain networks for at least a few days. It shows how stories can stay with us. This may have profound implications for children and the role of reading in shaping their brains."<sup>13</sup>

The neural circuit<sup>14</sup> that underlies the base for the ability to read is rapidly changing due to the cultural shift of reading electronically. This rapid change that has started to take place in the last 30 years, will drastically impact how these neural circuits are formed, therefore leading to overall large-scale change within the brain structure and functionality. There are certain functions, like language and vision, that the brain performs that are genetically encoded into the brain structure. Reading, however, is not one of them, this means it needs an environmental stimulus to develop. Almost 6,000 years ago the necessity for a new circuit that would allow for the ability to read

---

<sup>13</sup> "Why Read? Reason #6: Knowledge Is Power but Imagination Is More Valuable." Multiple Intelligences -- Assessment. May 20, 2015. Accessed October 14, 2018. <http://www.literacyworks.org/news/2015/5/20/why-read-reason-6-knowledge-is-power-but-imagination-is-more-valuable>.

<sup>14</sup> A **neural circuit**, is a population of neurons interconnected by synapses to carry out a specific function when activated. **Neural circuits** interconnect to one another to form large scale brain networks.

appeared. Over thousands of years, this code became more and more complex until the modern circuit was formed. Starting out with basic ability to count sheep, it has evolved to allow for a process like “internalized knowledge, analogical reasoning, and inference; perspective-taking and empathy; critical analysis and the generation of insight.”<sup>15</sup> The fact that the reading circuit is developed through an environment, means that these skills would be lost due to the fact that as the circuit develops it would create pathways that are best suited to handling and comprehending the medium by which the information is conveyed. In a society where the medium used is “fast, multi-task oriented and well-suited for large volumes of information” the result is a circuit that is best equipped to keep pace with such a structure. The current digital media is setting children and adults up for brains that are good at multitasking, skim reading, and grasping general overviews.

According to UCLA psychologist Patricia Greenfield, less time will be allocated to time-consuming, deep reading which teaches skills like inference, critical analysis, and empathy. A study on how students retain information when presented in different mediums was conducted in Stavanger, Norway, by psychologist Anne Mangen and her colleagues.<sup>16</sup> They asked questions that would judge how well students were able to understand the plot and reconstruct the storyline. The short story chosen was Jenny, Mon Amour. Half the students read the story on a Kindle, and the other half on paper. The results showed “that students who read on print were superior in their comprehension to screen-reading peers, particularly in their ability to sequence

---

<sup>15</sup> Wolf, Maryanne. "Skim Reading Is the New Normal. The Effect on Society Is Profound | Maryanne Wolf." *The Guardian*. August 25, 2018. Accessed October 15, 2018. <http://www.theguardian.com/commentisfree/2018/aug/25/skim-reading-new-normal-maryanne-wolf>.

<sup>16</sup> Mangen, Anne, et al. “Reading Linear Texts on Paper versus Computer Screen: Effects on Reading Comprehension.” *International Journal of Educational Research*, vol. 58, 5 Jan. 2013, pp. 61–68., doi:10.1016/j.ijer.2012.12.002.

detail and reconstruct the plot in chronological order.”<sup>17</sup> The way a print text is structured allows for a linear storytelling, that encourages the reader to go back and re-examine what they’ve previously read, re-enforcing the information. With electronic reading, the act of scrolling dissuades readers from this process and encourages skim reading.

The fundamental foundation for building strong comprehension skills starts as children; when parents sit down to read to their children it is more complex than just the parent reading out loud and pointing to images. By engaging in “Dialogue Reading” parents ask their children questions engaging them in discussing the character and plot. By asking a simple question “what is this?” while pointing to an image of an insect, the child responds saying it is a bug. Thus engaging the child in recognition, the parent then responds with “correct, it’s a ladybug,” the parent confirms this idea and expands on it, introducing a new level of information. By asking the child to then say the word back to them, it helps the child with pronunciation. By engaging the child with interaction it helps them focus on the written text and images. Instead of just reading out loud which helps with auditory skills, the children engage with the images reinforcing the skills needed for imagination. The tactile aspect of reading is also present. A child can flip back and forth between pages, re-examining and questioning things that don’t make sense. Helping them discover linear storytelling and starting to understand spatial concepts; which is vital for visual learning. By seeing how far they’ve read in the book, the reader sees and feels where they are in

---

<sup>17</sup> Wolf, Maryanne.

the book. This emphasizes the idea of “unfolding” the story; both literally and figuratively.<sup>18</sup>

These foundational skills are the building blocks that are expanded upon as children grow.

## Traditional 2.1

In its traditional format *Peur de noir, moi?* is a children’s book with simple lines of text and illustrated images. The illustrations are flat and simple mimicking a childlike style. The illustrations are simple and not overly complex so they suggest an object or concept without explicitly telling the child what they should be picturing in their mind. This allows for the child’s imagination to be stimulated by the artwork. The story is written from a child’s perspective so that the reader can relate to the main character who is also a child. These similarities form a bond between reader and character, as the reader identifies with the character’s actions and emotional responses. The main character, Clara, goes through a series of rooms; her reaction to the dark and the different objects in each room create a sense of empathy within the reader. When Clara goes into the living room and is spooked by ghosts that are really just shadow the child reading may relate to this experience and will empathize with Clara. The illustrations will help the child recall their own experience but because it is a drawing the reader will be forced to exercise his memory muscle in the brain to recall his own experience. When the child reconstructs the event he will evoke the emotions (which most likely mimic Clara’s emotions of fear) he felt strengthening his empathetic bond with Clara. The book presents the night-time terrors that haunt children in a charming, less frightening manner. The shadows in the living room are presented as ghosts, however rather than being terrifying creators, the illustration

---

<sup>18</sup> Tactileness of books “ unfolding story” ....reference must be added.

depicts a much friendlier looking ghost. Thus changing the mental perception away from ghosts being scary. Darkness is an excellent subject for teaching children to read about because it is something that naturally evokes our imagination and strong emotions. It stimulates the reading brains circuit teaching empathy and deep thinking as children learn to associate things like shadows to the concept of light and dark forms.

Figure 2.1

Figure 2.2

The traditional print version of *The Diamond as Big as the Ritz* is a small book, only 96 pages. The book is purely text-based in a serif font. The simple layout of the text and lack of visual imagery allow the reader to focus solely on the text. On average most people read about 50 pages an hour, a book this size would take about two hours to read. This is perfect for retraining the brain to use deep process and critical thinking skills. “This is because 50 minutes is the ideal amount of time to focus on one item before [starting] to require a break.”<sup>19</sup> This is enough time for the reader to form attachments and become emotionally invested in the story. This is important for enhancing brain connectivity and improving brain function. By using expressive passages Fitzgerald creates a world in the reader’s mind; “John saw that the upholstery consisted of a thousand minute and exquisite tapestries of silk, woven with jewels and embroideries, and set upon a background of cloth of gold. The two armchair seats in which the boys luxuriated were covered with stuff that resembled duvetyn, but seemed woven in numberless colors of the

---

<sup>19</sup> Rodrigues, Joseph. "5 Tips To Maintaining A Strong Focus While Reading." Iris Reading. February 28, 2018. Accessed October 10, 2018. <http://www.irisreading.com/5-tips-to-maintaining-excellent-focus-while-you-are-reading>.

ends of ostrich feathers.” (2.7)<sup>20</sup> Fitzgerald’s use of descriptive words and imagery allow the reader to clearly imagine what is happening which triggers brain stimulus. The way he writes his characters makes them relatable and real, allowing for readers to emotionally bond and empathize. Reading fiction is important because the way it is written allows for readers to become involved in the stories. This has a profound impact on how the brain changes when reading. Studies show that changes while reading novels registered in the left temporal cortex. That area of the brain is “associated with receptivity for language, as well as the primary sensorimotor region of the brain. Neurons of this region have been associated with tricking the mind into thinking it is doing something it is not.” This is the phenomenon, known as embodied cognition, that makes it possible for people to really understand a character, and [can] transport [the reader] into the body of the protagonist,” according to neuroscientist Professor Gregory S. Berns who is researching these processes at Emory University's Center for Neuropolicy in Atlanta.<sup>21</sup> Stories have deep meaningful impacts on people’s lives and it’s because of how they shape the brain. Storytelling involves many different forms of communications, and the way that translates into the brain is a complex process that touches multiple areas.

### Figure 2.3

The instruction guide that comes with each piece of Ikea furniture is straightforward. The images used to show the furniture parts are simple black line drawings. Every part is clearly shown with

---

<sup>20</sup> Fitzgerald, F. Scott. *The Diamond as Big as the Ritz: And Other Stories*. London: Constable, 1998.

<sup>21</sup> Bergland, Christopher. "Reading Fiction Improves Brain Connectivity and Function." *Psychology Today*. January 4, 2014. Accessed November 13, 2018. <http://www.psychologytoday.com/intl/blog/the-athletes-way/201401/reading-fiction-improves-brain-connectivity-and-function>.

a number by its side to represent how many pieces should be included in the box. The guide is supposed to be uncomplicated in its simplicity, however, self-assembly is hard, and people sometimes hire professionals to do it for them. While understanding a diagram is easy, actually applying the knowledge learned there can be tricky. The reading circuit may allow people to understand the diagram but it doesn't necessarily help them assemble it. The neural process for reading helps with theoretical and emotional driven aspects of life but other regions of the brain handle our motor skills. It also depends on what type of learner the person is; auditory, visual, or tactile. User manuals that only involve one type of learning process can convey the message but often lack tools that aid in deeper understanding.

Figure 2.4

Figure 2.5

## Electronic Books 3.0

ENIAC (Electronic Numerical Integrator and Computer) was announced as the first computer in 1946. This technological advancement would go on to help shape the 21st century; heralding in the third industrial revolution and paving the foundation for the fourth. With the start of the digital era, computers helped with the organization, storage, and retrieval of large amounts of information and the coordination of complex processes.<sup>22</sup> The categorization and archiving of information in a digital format was instrumental in influencing the way people accessed and shared information.

The Gutenberg project, founded by visionary Michael Hart in 1971, was started with the goal of archiving and digitizing cultural works. The first ebook was released that same year on the platform as etext #1.<sup>23</sup> The idea of Project Gutenberg was that everyone could have access to a free digital library. In 1971 this was an ambitious goal and seen by many professionals as an unrealistic dream. For many years Michael and a team of volunteers had entered in hundreds of books, the first big break that took the platform to the next level was the arrival of the web in 1990. The next step in legitimizing the project was in 2000 with the creation of Distributed Proofreaders. In 2008, Project Gutenberg was able to product 320 digitized versions of books per month, tens of thousands of those being downloaded each year. This paradigmatic shift in how people experienced information would radically change the importance of print book; in August 1998, Michael wrote in an email interview: "We consider etext to be a new medium, with no real

---

<sup>22</sup> Impact.", "Social. "Social Impact." *Computer Sciences*, Encyclopedia.com, 2018, [www.encyclopedia.com/computing/news-wires-white-papers-and-books/social-impact](http://www.encyclopedia.com/computing/news-wires-white-papers-and-books/social-impact).

<sup>23</sup> Lebert, Marie. "A Short History of EBooks ." *NEF*, 2009, pp. 5–13. *NEF*, [www.etudes-francaises.net/dossiers/ebookEN.pdf](http://www.etudes-francaises.net/dossiers/ebookEN.pdf).

relationship to paper, other than presenting the same material, but I don't see how paper can possibly compete once people each find their own comfortable way to use etexts, especially in schools."<sup>24</sup>

Amazon is multi-billion dollar company started by Jeff Bezos in 1995 as the first online bookstore, with over 3 million books in its catalog. Its advertising pitch; "Earth's Biggest Bookstore".<sup>25</sup> In 1999 it expanded to include electronics and videos, and by 2004 it was a full department store with its own search engine. The way people shopped was a whole new virtual experience; products were provided with brief summaries, reviews, and ratings. Books were not stored on shelves that people could browse but rather held in huge warehouses, that were then packaged and shipped to the customer. The browsing was online; clients could flip through books, read small excerpts, order online and pay by credit card. Jeff Bezos stated in the Amazon Press Kit that "businesses can do things on the web that simply cannot be done any other way. We are changing the way people buy books and music. Our leadership position comes from our obsessive focus on customers. (...) Customers want selection, ease of use, and the lowest prices."<sup>26</sup> This defined the very premise of shopping on the web: convenience without sacrificing quality. Within a decade this mantra had been adopted by society; all aspects of life could be made more convenient.

---

<sup>24</sup> Lebert, Marie.

<sup>25</sup> Cakebread, Caroline. "Amazon Launched 22 Years Ago This Week - Here's What Shopping on Amazon Was like Back in 1995." Business Insider. July 20, 2017. Accessed November 20, 2018. <http://www.businessinsider.com/amazon-opened-22-years-ago-see-the-business-evolve-2017-7?IR=T#1999-ecards-and-auctions-3>.

<sup>26</sup> Lebert, Marie.

By 2007 reading was no longer limited to computer screens. In 1998 companies started to create ways to read books on electronically held devices, some of the first companies to do so were; “Rocket eBook (created by NuvoMedia), theEveryBook (created by EveryBook), the SoftBook (created by SoftBook Press), and the Millennium eBook (created by Librius.com)”<sup>27</sup>. The problem was the technology; the memory space, screen and text legibility and inconvenience (compared today’s e-readers) meant that while early adopters and college students started to use them the rest of the population wasn’t ready to accept them over traditional print books. In 2017, about 266 million ebooks were sold in America.<sup>28</sup> The big change was the Amazon Kindle released in 2007, with 80,000 books all starting at \$9.99. The design was sleek, functional and simple. Instead of having to download text from a web browser it used the 3G wireless connection to download books, the 2G SD card meant there was plenty of storage, the screen used E Ink technology and page turning buttons.<sup>29</sup> Today the technology has only increased the possibilities that e-readers can offer. Books with multimedia, audio, hyperlinks, videos and much more incorporated.

Ebooks today have a lot to offer, they bridge the gap between traditional reading and online reading. Meaning many of the benefits of traditional reading can be found in the ebook format, along with additional benefits. The greatest advantage of ebooks is their convenience; thousands of books can be stored on one device. Annotating and highlighting are as simple as a touch of a finger, and cataloged later so that readers can see all highlighted passages at once. This

---

<sup>27</sup> Lebert, Marie.

<sup>28</sup> Fuller, Steve. "Topic: E-books." Statista. Accessed October 4, 2018. <http://www.statista.com/topics/1474/e-books>.

<sup>29</sup> Lebert, Marie.

functionality is extremely practical when looking at reports, research, or analyzing dense text. Many ebooks also include hyperlinks which provide more information on a selected topic. For example, perhaps in an ebook on King Henry VIII, the name of his daughter Mary might be underlined with a hyperlink. Once this was activated it could take the reader to a webpage with more information on Mary. This kind of non-linear learning is something that Generation Z has grown up with, and are accustomed to. Being able to navigate through multiple sources of information and gain a wider perspective on a topic is helpful for fluid intelligence and problem-solving. There is also the added bonus of the Dopamine effect. Every time a new tab is opened, or hyperlink takes the reader to a new source, they experience a small release of Dopamine. A common misconception is that Dopamine is a pleasure chemical, but rather “Dopamine is connected to rewarding experiences, but not in that it makes you feel good”.<sup>30</sup> Dopamine helps the body recognize “incentive salience.” Which is tells the body that you are about to experience something good, and should, therefore, pay attention. Once learning that clicking on a hyperlink is a good experience they will click on another one they see, reinforcing the idea of gaining more knowledge. For Elderly people learning to use new devices and additional ways to access information can improve brain circuits and fire-up neural pathways by making new connections.

Due to the fact that this technology is relatively new, the brain hasn't had time to adapt.

Biological evolution in humans takes thousands of years to adapt to change, but this technology has only been around since the 90s. As Allan Liu<sup>31</sup>, chairman and professor of English at the

---

<sup>30</sup> Ley, David J., Ph.D. "No, Dopamine Is Not Addictive." Psychology Today. January 6, 2017. Accessed November 7, 2018. <http://www.psychologytoday.com/us/blog/women-who-stray/201701/no-dopamine-is-not-addictive>.

<sup>31</sup> Lui is a researcher of the relation between literature and information culture

University of California, Santa Barbara, stated “initially, any new information medium seems to degrade reading because it disturbs the balance between focal and peripheral attention. This was true as early as the invention of writing, which Plato complained hollowed out focal memory.”<sup>32</sup>

It takes time for the “mentality” of the reader to adapt to this change, as it does the societal systems in which they take place. A similar transition happened in Ancient Greece from oral tradition to writing. Socrates worried that students would think they knew the truth because it was written in a text before they ever truly understood the concepts. Many Neurologists like Maryanne Wolf (the Director of the Center for Dyslexia, Diverse Learners, and Social Justice in the Graduate School of Education and Information Studies at UCLA) worry that children today, “will not learn, with their passive immersion, the joy and the effort of the third life, of thinking one’s own thoughts and going beyond what is given.”<sup>33</sup>

The ability to have access to unlimited information and knowledge is a gift that will change the course of history; it will shape economics, politics, and society. With the advancement of technology, humanity improves its understanding of the world and oneself. The question is how to best take advantage of the technology without losing fundamental processes that help society be creative empathetic critical thinkers.

---

<sup>32</sup> Editors, The. “Does the Brain Like E-Books?” *The New York Times*, The New York Times, 14 Oct. 2009, [roomfordebate.blogs.nytimes.com/2009/10/14/does-the-brain-like-e-books/](http://roomfordebate.blogs.nytimes.com/2009/10/14/does-the-brain-like-e-books/).

<sup>33</sup> Editors, The.

## Electronic Books 3.1

The ebook format of *Peur de noir, moi?* is read on a handheld electronic device. It displays an image that is similar to the traditional book's format. The difference is the story is shown through images that are from the traditional version with the no text to go with the images. Instead there is an audio function where a narrator reads the story to the child, the child is still able to grasp the concept of the novel by looking at the images and listening to the story. Having every page alternate with the room shown as light and dark, helps the child discover new concepts like turning the light in the room on and off by having different images appear depending if the light is on or not. The child is able to quickly understand what is being shown in the story, and grasp the concept of on and off being related to dark and light. By showing that the difference between light and dark alters the perception of the world around us. When the living room light is on the reader can see the cat under the table, but when it's dark all that can be seen are two eyes glinting. The images help explain complex processes that are hard for children to imagine or comprehend through explanation. But the ebook lacks active interaction because the story is read aloud and the images are static. There is nothing to hold the readers attention to the screen. The small screen size also creates problems visually, as it is a strain to clearly see the pictures. However, the convenience of being able to pull up the book at anytime compensates for the small screen.

Figure 3.1

Figure 3.2

Scott Fitzgerald's *The Diamond as Big as the Ritz* ebook can be read as a Pdf, Publication, or Kindle a format that is 76 pages long. The display is a clean two column grid with a serif font. To navigate the book the user must swipe left to flip to the next page, this motion may dissuade readers from flipping back and forth to reread sections as the language is quite complex and may need rereading to fully comprehend what Fitzgerald was saying. The table of contents contains links to the sections rather than page numbers, immediately taking the reader to that location in the pdf. The linearity of the story is disrupted a bit by this display, as the reader does not comprehend how long the text is. Melville House added an additional archive of essays, short stories, and images at the end of the document. So upon first glance, the reader thinks that the book is 197 pages in total. However, the ebook is an excellent format for a student or someone who is interested in taking notes or highlighting passages within the text. The pdf keeps a record of all noted marks added to the text and makes the placement easy to locate and recall. The added information compiled by Melville House's designers makes a nice resource center that helps explain some of the text within the context of what was happening around the time the novel was written. Like including images from the Ritz Carlton Hotel's Menu from 1920. Having this information stored online or in the cloud makes it easy to share notes with other people and transfer the document to any compatible device (phone, tablet, laptop, kindle, etc).

Figure 3.3

Figures 3.4

The ebook format of IKEA's assembly guide can be found online and requires Adobe Acrobat Reader to view the document. The online version is a digital copy of the printed version. It

shows line drawn figures interacting with 3-D renderings of the furniture. There are small pieces of text when warnings or explanations are necessary, the text comes in multiple languages. The use of symbols such as arrows and magnified sections helps the user understand through pictorial clues what they are supposed to do without the need for written directions. This leaves room for interpretation and assumes that the user has some basic knowledge about screws, nails, and general tools used to build objects. The steps are clearly numbered in a consecutive order that makes it easy to follow. The digitalization of the content allows for the reader to zoom in on illegible areas and always have access to a copy of the manual, incase the paper copy is damaged or lost.

Figure 3.5

## Hybrid Books 4.0

The concept of a Hybrid book is to take enhanced ebooks and to combine them with traditional print media. Enhanced ebooks imply additions to text in the form of videos, audio clips, and images. As technology advances, more complex systems like holographs, conductive inks, virtual reality and augmented reality will be incorporated. The traditional print media will be presented as a physical object that will mimic the look of a traditional book while having technological alterations that the reader can discover. For example using conductive ink to help teach people how circuits work in a fun and engaging manner, as company Panopile has done. Their collection of six interactive paper books, help children understand different concept behind how technology in every-day devices function. The children explore these concepts through “paper, color, shapes, and electricity.”<sup>34</sup> Each project uses hand drawn graphite zones ( giving the user total control) over how the different elements work. *Resistance* is like a piano but on paper, the user tunes the musical instrument by with the graphite pencil and by pushing a pop-up piece of paper, that is connected to the page, down it closes the circuit. Hybrid books are an important step in the development of how society interacts and incorporates technology into everyday life. As the fourth industrial revolution<sup>35</sup> progresses the line between the analog and digital world will fade. Looking towards the future, it is necessary to find new ways to present information that will match the speed, complexity, and connectivity that will be required to reach new audiences.

---

<sup>34</sup> "Papier Machine, the First Electronic Paper Toys by Panoplie." Panoplie. 2018. Accessed September 24, 2018. <https://panoplie.co/>.

<sup>35</sup> *It is characterized by a range of new technologies that are fusing the physical, digital and biological worlds, impacting all disciplines, economies and industries, and even challenging ideas about what it means to be human.*

*Schwab, Klaus. "The Fourth Industrial Revolution, by Klaus Schwab." World Economic Forum. 2017. Accessed October 25, 2018. <https://www.weforum.org/about/the-fourth-industrial-revolution-by-klaus-schwab>.*

The development of digital technology is a relatively new concept compared to the thousands of years people have been establishing processes for writing or even speaking. Scientists have demonstrated that there are fundamental differences in the reading brain between traditional and digital forms. Traditional books expand critical analysis, empathy and “deep” reading processes. Ebooks help people develop skills for multi-tasking, general concept comprehension, and taking initiative. Both of these skills are imperative in today’s world, people need to have all the skills available, not just a certain set. Publishers need to find innovative approaches that are applicable to the current design and technological features to optimize communication.

Technology is developed for humans, by humans. That means there is a very ergonomic principle to how it is developed; it follows the natural structure of what humans deem necessary based on what is already known. For example, it would be hard to imagine a chip that is a book but not to put a chip in a book. A simple tracking device that would allow someone to locate the book with a quick tap on a phone, that would recall the book's location or have it give off some indicator of where it is, like a sound or visual cue. Technology offers a way for people to interact with books in a more intimate manner. David Gelernter, a professor of computer sciences at Yale University says that “[He] might like to search its text online, download updates and keep an eye on reviews and discussion”; all interactive options that strengthen the communication abilities of the book.<sup>36</sup> However, more information does not always equate to stronger communication,

---

<sup>36</sup> Editors, The.

sometimes too much superfluous information overwhelms, and confuses the reader. Book creators need to compile comprehensive, cohesive, content that will enforce their original idea.

How people interact with technology will affect when and why they use it. Incorporating technology into text-heavy objects will allow designers to create systems and ways of conveying the information they contain and how these devices function in a user friendly manner. A project produced by the Royal College of Art in London called *Blink*<sup>37</sup> connects printed books with any digital device. The books are printed with conductive ink that allow the reader, by touching a button (created with the conductive ink), to communicate with any technological device through a wireless transmitter that is hidden in the back cover. The reader can use these links to search up any content; videos, images, or websites. Hybrid books like this will make reading and comprehending dense material easier as it will allow people to further explore concepts found within the text. Having search functions will allow readers to easily navigate through the text, using highlighters to mark key locations that can easily be removed or expanded upon depending on the need. By making the navigation more functional, it allows for greater interactivity within the sections. Many devices for machine-based operating systems come within manuals that allow for real-world learning. Apps equipped with Augmented Reality technology scan the object and project the manual in an interactive way; indicating buttons in the real-life environment by using animations and arrows to explain functions and directions. By equipping manuals with interactive guides, they can help explain the linearity of the process with step by step instructions. An Interactive 3D model helps avoid language barriers and simplifies complex

---

<sup>37</sup> "Bink Link." Manolis Kelaidis | Blink. 2017. Accessed September 20, 2018. <http://manokel.com/blink/>.

explanations that help people logically comprehend what is being expressed. By simplifying processes and clearly showing what is expected through “immersive 3D experiences integrated with AR technology, [it] will increase the informational retention.”<sup>38</sup> These additional features will also help users feel more secure by reducing the fear of unknown possibilities while reading just a text and image-based manual. By reducing the unknown factors and streamlining the learning process it will make using these Hybrid manuals more time efficient. All of these processes can be applied to other genres of literature; fiction, fantasy, horror, biographical, etc to enhance comprehension.

People can gain access to direct information, quickly and easily with these new technologies that can be integrated to traditional forms of text and learning. Previously people would have to compile multiple sources of information to get a broad overview of a topic, today that is all already compiled in one device that is easy to navigate and pull information from. AR is direct access to information, it provides a complete image without the need for inference or guessing. This leads to quicker understanding with fewer complications and errors within applied learning. Which makes using AR more economical for teaching purposes. In 2017 Mercedes- Benz released the Ask Mercedes App. Any user with an iPhone 6 has access to the database for the mechanical parts and systems in their car.<sup>39</sup> The user would input the serial number that identifies their car, and the app would pull up an interactive 3D model using augmented reality to help users fix their car or set up controls like Bluetooth and navigational systems. This app is

---

<sup>38</sup> Jansen, Collen. "Interactive User Manual with Augmented Reality -Quytech." LinkedIn SlideShare. July 06, 2018. Accessed October 12, 2018. <https://www.slideshare.net/colleenquytech/interactive-user-manual-with-augmented-reality-quytech>.

<sup>39</sup> Jansen, Collen.

extremely accessible and useful for Mercedes car owners, allowing the user to have an all-inclusive understanding of their car. These devices are a mixture of the analogue learning process and the heightened digital process. They will become the new standard of learning and possibly even how people will read for pleasure.

## Hybrid Books 4.1

The Hybrid book of *Peur de noir, moi?* combines the traditional book version with an electronic book version. To read the story as a hybrid book, the reader must have both the print version of the book, and a phone or tablet that can be held above the printed version while reading. There is also an app that must be downloaded in order for the reader to have access to the animated version that accompanies the print book. The images in the traditional version and electronic version use the same style to create consistency. The traditional book has a few lines of text to explain what is happening in the illustration. The text and images act as a guide for the child who then uses the references provided to imagine and create their own version of the story. The parent who is reading along with the child then shows the child the electronic version. This is displayed separately on a hand held device (ex. iphone, ipad, tablet) where some elements from the traditional page (for example the cat) then become animated. This animated element reinforces the concept the text was explaining. This hybrid book allows the child to read and empathize with the main character about the fears of the dark, while also understanding abstract concepts through the use of imagination and deep thinking processes which are reinforced by the use of small animations that make the meaning clearer.

Figure 4.1

Figure 4.2

Figure 4.3

Figure 4.4

*The Diamond as Big as the Ritz's* hybrid book version was released as part of the Illuminations series for Melville House. They are collections of images, text, documents, short stories, and videos that have been compiled for additional reading or viewing by the reader. The Illuminations can be accessed from the traditional book by a QR Code or website link in the book. Thus requiring the reader to view the additional text on an electronic device; computer, smartphone or tablet. In the ebook format, the additional material is just added to the end of the book in an appendix. The hybrid book version is a great example of how extra information can be easily and directly accessed on top of the original text. In the back of the Hybrid version, a portrait and other short essays by Fitzgerald have been included. Which is a first-hand sample of more of Fitzgerald's work for comparison or if the reader is interested in his other work it provides a sample giving a better understanding of his style. By adding news clippings, and other cultural moments from the past it creates a clear image of the world Fitzgerald was trying to portray while giving new references. By taking the initiative by gathering more knowledge for the reader the publisher has started the process of furthering the reader's general knowledge, and they will be more likely to continue to research more on their own.

Figure 4.5

Figure 4.6

Adam Picker's app; *AssembleAR*'s hybrid of IKEA's instruction guide, combines the booklet with Augmented Reality technology. To use the Augmented Reality the user must download the AssembleAR app onto their cell phone. When the user scans the barcode on the box of their Ikea furniture, it brings up an animated version of the manual. On the cell phone screen, it also shows an augmented reality version of the box on the floor. To navigate the app users swipe left to move on to new steps, and see the parts required for assembly. Though the app isn't officially produced by Ikea, the way it has been designed mimics the style of their manual, and Picker has re-made the parts in photoshop, illustrator and 3D rendering software, to give it the appearance of Ikea's manual<sup>40</sup>. Because Picker used Ikea manuals as his template, all the steps match with the provided guide by Ikea for each select piece of furniture. On the lower half of the screen, line drawings that match the Ikea print manual show which step and parts are needed. On the top half of the screen, the augmented reality shows the viewer how to assemble the parts through animations. This helps show people instantly how they are supposed to assemble furniture, from all viewpoints and in real-life in front of them. This helps take away the confusion of trial and error because people can experience how it is supposed to be assembled. People are able to grasp the concepts faster with a more global understanding of how the different parts work together.

Figure 4.7 (opening)

Figure 4.8 (animation)

Figure 4.9(animation )

---

<sup>40</sup> Morby, Alice. "IKEA Assembly Made Easier through Augmented-reality App." Dezeen. March 25, 2018. Accessed November 23, 2018. <https://www.dezeen.com/2018/03/23/ikea-assembly-made-easier-through-augmented-reality-app/>.

## Conclusion 5.0

Before there was a written language there was spoken language, which gradually progressed to a written form of communication. For thousands of years dictated how history and culture were remembered. A few decades ago with the arrival of the computer, we heralded in the forth industrial revolution, and with this technology, the electronic book was created. Now in an environment where our culture is immersed in a world filled with technology, the boundary between traditional books and technology is blurring. Technology is influencing and shaping our lives at an exponential rate. This will affect how we interact with the analogue world, and objects that were once considered precious will find their very existence challenged. The key is to not let them remain in the past but to encourage them to evolve into new, hybrid objects that are in keeping with the modern times. For books, their path lies in becoming hybrid books; objects which combine traditional print formatting and technological enhancements to become an experience which has all the benefits of both.

The Hybrid book is a combination of different elements which allow for greater exploration. Today standard books have a fixed system of interactions that dictate how people interact with print objects on sheets of paper that are bound together. This ritual of opening and flipping to the first chapter is a habit formed by the repetitive, learned process of reading. Hybrid books will challenge this learned behavior. The technology will impact the way people interact with books, as it has impacted life today. A book called *Sensory Fiction* by Felix Heibeck creates new ways for people to experience the story through wearable technology. The physical book sets the mood

and scenery while the wearable allows the reader to experience the characters physiological emotions; “changes in the protagonist’s emotional or physical state triggers discrete feedback in the wearable, whether by changing the heartbeat rate, creating constriction through air pressure bags, or causing localized temperature fluctuations.”<sup>41</sup> Traditionally books convey emotions and empathy through written words and images. But now with 4D cinemas and virtual reality game rooms, people want a more immersive experience. Society quickly conforms to new trends which in turn, become the norm. In a few generations, a child may pick up a print text and be confused when they stumble across a word they don’t know, and the book doesn’t have a hyperlink immediately providing additional information.

Whenever controversial ideas are developed there is a general shift within the environment that has stimulated this need, and not just one or two people answer the need but rather many people come up with creative solutions. However, only one or two of those solutions will be adopted as the accepted way by society. In the 1960s computer operating systems began being developed by many different competitors; Honeywell, IBM, DEC, Sperry, Burroughs, ICL, to name a few. Over the next decade many of the companies merged, went out of business, or went into different sectors. Each had a unique take on how operating systems could function, and the best options weren’t necessarily the ones that have become the standard systems used today. The three that emerged as the standard were Windows, Macintosh, and Linux. These were the three systems that made it. Hybrid books are still a fledgling concept and there are many different forms that a Hybrid book can take. SmartBound is a real print book, designed by SmartBound Technologies,

---

<sup>41</sup> Heibeck, Felix, Alexis Hope, and Julie Legault. "Senseroty Fiction." MAS S65: Science Fiction to Science Fabrication. Accessed September 24, 2018. <http://scifi2scifab.media.mit.edu/2013/12/19/sensory-fiction/>.

with interactive elements that don't require any other electronic devices to work as it is powered by a battery stored in the back cover. By touching different buttons, the reader triggers audio clips, songs and games<sup>42</sup>. The book is bound like a regular book, and has pages that reader flips through. A different type of Hybrid book developed by Fujitsu Technologies, and presented in 2013 connects any print object with a digital environment. "The concept detects objects your finger is touching in the real world. That way, the surface you touch becomes a touchscreen interface"<sup>43</sup>. For example, if someone selected a section of text they could have it google translated in the internet browser. Society hasn't interacted enough with Hybrid books to choose a method that best suits their needs or expectations for what a Hybrid book is. Right now Hybrid books have different formats, materials, and uses. The range of what they can do will only increase as the technology required to make these objects becomes more readily available, accessible, and versatile.

As time progresses society moves forwards, changing and evolving with the times. Generation Z was the first to have computer typing classes in school, have cell phones at age 13, and saw the introduction of constant media culture. They helped shape a world of immersive experiences through their interests and demand for more user friendly access to technology. The younger children of Generation Z have grown up in the digital world and are accustomed to using multiple platforms and technological devices. Children as young as two years old know how to use smartphones and iPads, the technology isn't something they have to be taught, rather it is

---

<sup>42</sup> "Home." SmartBound Technologies. 2016. Accessed October 3, 2018. <http://www.smartbound.com/index.html>.

<sup>43</sup> Hornyak, Tim. "FingerLink Turns Paper into Touch Screens." CNET. April 19, 2013. Accessed October 22, 2018. <https://www.cnet.com/news/fingerlink-turns-paper-into-touch-screens/>.

something they are accustomed to. They pinch, double tap and zoom with practiced ease. This ease with technology will only increase with time, already the preferential treatment of the digital world due to its convenience and time efficiency is affecting society. As the analogue and digital world merge it will be harder to define the boundaries that separate the two. The Hybrid book's place is in this new world. The traditional book may become obsolete, but once people have an understanding of how the nature of reading programs the brain in certain ways, individuals will be able to find the best methods for communicating their ideas. Traditional learning can be off-set with experiential learning, ensuring that people acquire knowledge in the most inclusive way. However, this future may not be for everyone, as technology is expensive and resources scarce. It begs the question of who gets to learn what in what way? If society does migrate towards the Hybrid book it will be up to them to decide how it will work and what will change. This could be an opportunity to give equal advantages to people who don't learn well with the traditional methods. Children with dyslexia would be able to grasp concepts with less difficulty by having school books enhanced with videos, augmented reality, and interactive learning exercises. Surgical students would benefit from seeing holographic renderings of different body parts before ever having to step into the operating room. Books could produce scents; like the smell of the chocolate cookies in the bakery, or the fresh pine trees in the forest. Every sense engaged and focused on the story in an immersive world, leading to deeper concentration and learning. This could change how society functions; giving people greater understanding of general knowledge and allowing for specialized skills to be more thoroughly explored.

There is no standard, no one right way to make a Hybrid book. There is an opportunity to explore and grow within this nascent field. With that freedom comes a responsibility to create a system that reinforces good developmental practices and to make sure people don't lose or forget fundamental values that are enforced through these learned practices. The reading brain is fundamental to our societies identity, it is what makes people compassionate, analytical thinkers. It is imperative that society does not lose these traits, or the world will no be the same. Society must continue to build upon these neurological circuits, so that they may become the best possible version of themselves.

## **Conclusion 5.1**

In *Peur de noir, moi?* The traditional formatting functions well as a children's book, the concept of on and off, light or dark has a lot of room for creative expression and imagination. The mental work that a child does to understand the story is the type of practice that a child's reading circuit needs; empathy, analysis, and imagination. The electronic book format makes it more convenient to read anywhere, but there is dissonance between reading the physical book version and the ebook. The ebook lacks some of the personality of the traditional book and there is no texting accompanying the images. Thus, forcing the reader to listen to the audio version of the story with the narrators interpretation of the text expressed through tonality and emphasis on certain words. Thereby changing the meaning of the text, compared to how someone else might have read the book. The hybrid version is an engaging experience that holds the reader's attention as they wait to discover the next animation. However, this potentially distract from the text itself as the reader is distracted by the novelty. As technology becomes more incorporated into regular day devices

and practices people will grow accustomed to these behaviors and no longer be distracted by them.

*The Diamond as big as the Ritz*, as a traditional book for adults is exactly what is expected of traditional books; clean, easy to read, nicely bound, etc. The writing is what makes the book an experience for an adult reader. The descriptive language allows the reading brain to exercise its neurological pathways aiding in reinforcing the skills already there. The electronic book version has a nice addition of extra information collected from relevant sources added in an appendix. This is helpful should the reader require more context of the era and Fitzgerald. The hybrid book version is the appendix of the ebook, but it can be accessed through a QR code on the book, where it links to a digital archive of the information. The detailed story gives an opportunity to really improve the text through additional methods of technological enhancement.

Ikea manuals are an interesting design solution to the problem of how to give instructions without someone being able to be there in person to explain. The illustrations are a smart fix that help solve the problem of miscommunication, however they are images and therefore can only explain up to a certain point. Assemble AR helped by combining the print illustrations with Augmented technology to improve the communication of how things should look, which step to take, and simplifying the process. This use of augmented technology is increasingly popular for teaching as it uses many forms of communication to explain concepts.

## Interview 6.0

As an experiment, the children's book *Peur de noir, moi?* was given to two different people both age 21 (A & B). This interview was given with the intention of identifying what worked well and what could be improved upon with a basic hybrid book. This interview discusses the user experience while reading. Below is the list of questions and answers.

### **How did you interact with the print version vs hybrid?**

**21 year old A:** My attention was mostly directed towards the hybrid version because of the animation.

**21 year old B:** With the print version of the book, it was pretty simple to use. I just flipped through the book the traditional way a book is flipped. The hybrid version was also simple to use through an app made for it holding it up over the book.

### **What elements of the Hybrid book did you feel enhanced the text?**

**21 year old A:** The spoken word creates atmosphere and build tension.

**21 year old B:** The hybrid did not change the book drastically, it just took elements of the background and made it fuller for the reader. Having the background features such as stars and ghosts enhanced my experience of the environment and atmosphere of the book.

### **Did these additions provide clarity of the text?**

**21 year old A:** Yes

**21 year old B:** Because of the hybrid book I was able to feel like i was inside the book allowing me to follow the story and its mood better. It also felt like I was looking into a snow-globe because it had a static structure but dynamic features that allowed us to see the little world from outside of it.

### **Where any additions (for example the animation) distract from the book?**

**21 year old A:** The animations were distracting, especially the turning of the pages as the hybrid book does not align with the printed version.

**21 year old B:** It was not distracting.

**How did it feel to use both an electronic hand held device and print book to read from?**

**21 year old A:** I was quite confused at which version to look at. The screen is above the book and closer to my face but it is much smaller and strains my eyes. Whereas, the book had text, vibrant colors and the physical size is much larger.

**21 year old B:** the book enough is okay but the interactivity made the book more engaging and interesting for me. It made me curious as to what would happen in the pages to come and it made me read because I wanted to understand what i was seeing. This is a plus plus for people who don't enjoy reading and is a nice way to change up looking at a book when you can no longer make text interesting by graphical designs or 2d static visual aid.

**After this experience would you read other Hybrid books?**

**21 year old A:** Yes, because I enjoyed the way they moved and someone reading the story for me but, I wouldn't use it regularly. Holding two objects isn't user friendly.

**21 year old B:** I would totally read hybrid books I think Harry Potter and Lord of the Rings should do this

**What do you wish had been done differently?**

**21 year old A:** The screen size could be bigger or somehow incorporating both into one device.

**21 year old B:** I think using a bigger tablet than a phone or finding a way to read without having to stand up would be helpful. The only struggle is that you have to read the book with two objects and that it might not be easy to read while trying to hold the phone high enough to scan the printed book.

# Figures

## Introduction 1.1 - 1.3



Figure 1.1 (Cover)

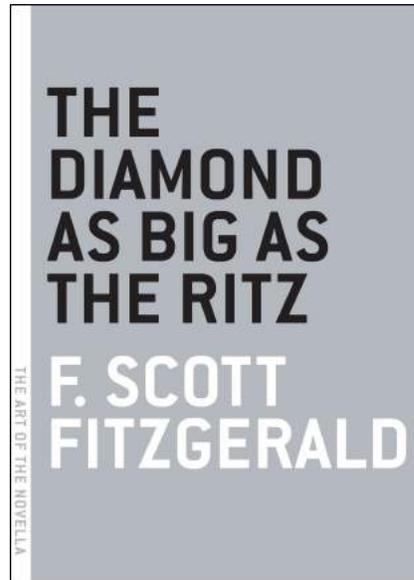


Figure 1.2 (Cover)

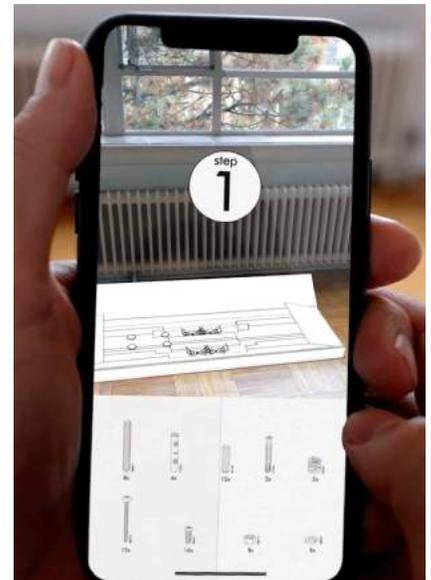


Figure 1.3 (Cover)

# Traditional 2.1 - 2.5



Figure 2.1 (Bedroom with light on )  
*Peur de noir, moi?*



Figure 2.2 (Bedroom with light off )  
*Peur de noir, moi?*

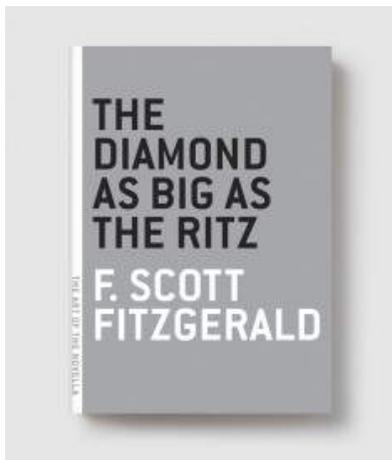


Figure 2.3 (Cover)  
*The Diamond as Big as the Ritz*



Figure 2.4 ( Ikea manual )

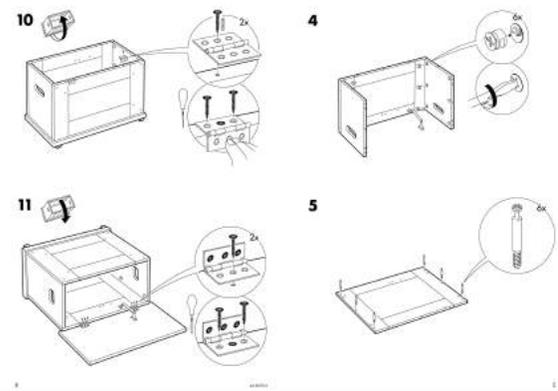


Figure 2.5 ( Ikea manual )

# Electronic Book 3.1 - 3.6



Figure 3.1 (Bedroom with light on)  
*Peur de noir, moi?*



Figure 3.2 (Bedroom with light on)  
*Peur de noir, moi?*

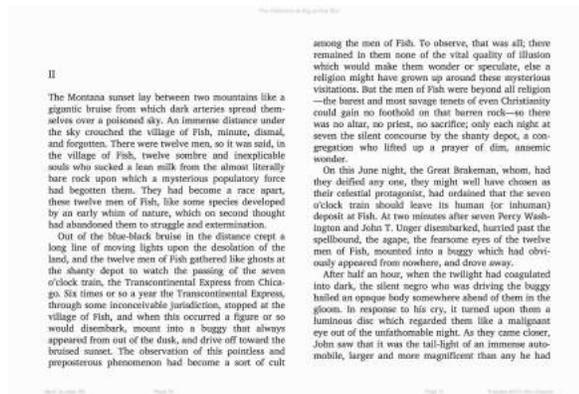


Figure 3.3 (Chapter 2)  
*The Diamond as Big as the Ritz*



Figure 3.4 (Extra Content)  
*The Diamond as Big as the Ritz*

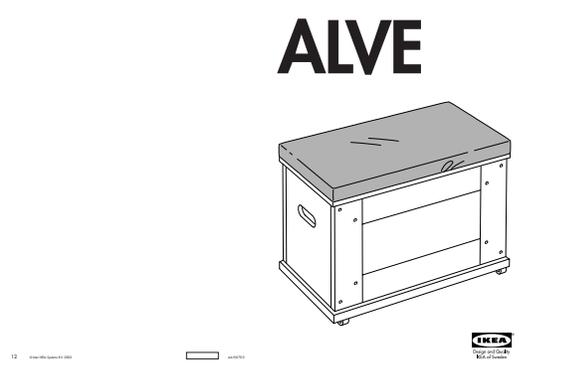


Figure 3.5 (Ikea manual)

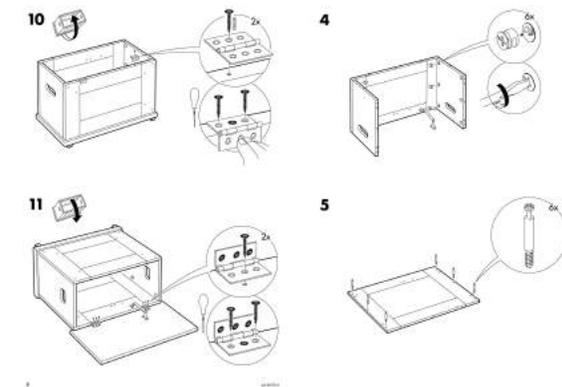


Figure 3.6 (Ikea manual)





Figure 4.7 (Opening)

*Assemble AR*



Figure 4.8 (Animation)

*Assemble AR*



Figure 4.9 (Animation)

*Assemble AR*

# Bibliography

Admin. "What Is Augmented Reality (AR)? Ultimate Guide to Augmented Reality (AR) Technology." Reality Technologies. October 04, 2018. Accessed October 26, 2018. <https://www.realitytechnologies.com/augmented-reality/>.

Argosy Publishing, Inc. "The Five Senses." Visible Body - Virtual Anatomy to See Inside the Human Body. Accessed December 04, 2018. <https://www.visiblebody.com/learn/nervous/five-senses>.

Bergland, Christopher. "Reading Fiction Improves Brain Connectivity and Function." Psychology Today. January 4, 2014. Accessed December 10, 2018. <http://www.psychologytoday.com/intl/blog/the-athletes-way/201401/reading-fiction-improves-brain-connectivity-and-function>.

"Bink Link." Manolis Kelaidis | Blink. 2017. Accessed September 20, 2018. <http://manokel.com/blink/>.

Cakebread, Caroline. "Amazon Launched 22 Years Ago This Week - Here's What Shopping on Amazon Was like Back in 1995." Business Insider. July 20, 2017. Accessed December 10, 2018. <http://www.businessinsider.com/amazon-opened-22-years-ago-see-the-business-evolve-2017-7?IR=T#1999-ecards-and-auctions-3>.

Elster, Charles A. "Hybrid Literature for Young Children: Selecting & Integrating Innovative Picture Books in the Early Curriculum." March 2011, 1-12. Accessed October 3, 2018.

Fitzgerald, F. Scott. *The Diamond as Big as the Ritz: And Other Stories*. London: Constable, 1998.

Fuller, Steve. "Topic: E-books." Statista. Accessed October 4, 2018. <http://www.statista.com/topics/1474/e-books>.

Heibeck, Felix, Alexis Hope, and Julie Legault. "Sensory Fiction." MAS S65: Science Fiction to Science Fabrication. Accessed September 24, 2018. <http://scifi2scifab.media.mit.edu/2013/12/19/sensory-fiction/>.

"Home." SmartBound Technologies. 2016. Accessed October 3, 2018. <http://www.smartbound.com/index.html>.

Hornyak, Tim. "FingerLink Turns Paper into Touch Screens." CNET. April 19, 2013. Accessed October 22, 2018. <https://www.cnet.com/news/fingerlink-turns-paper-into-touch-screens/>.

"How Technology Is Changing the Way Children Think and Focus." Psychology Today. December 4, 2012. Accessed September 24, 2018. <https://www.psychologytoday.com/us/blog/the-power-prime/201212/how-technology-is-changing-the-way-children-think-and-focus>.

Jansen, Collen. "Interactive User Manual with Augmented Reality -Quytech." LinkedIn SlideShare. July 06, 2018. Accessed October 12, 2018. <https://www.slideshare.net/colleenquytech/interactive-user-manual-with-augmented-reality-quytech>.

Lebert, Marie. "A Short History of EBooks." *NEF*, 2009, 1-87. Accessed October 5, 2018. <http://www.etudes-francaises.net/dossiers/ebook.htm>.

Ley, David J., Ph.D. "No, Dopamine Is Not Addictive." Psychology Today. January 6, 2017. Accessed November 7, 2018. <http://www.psychologytoday.com/us/blog/women-who-stray/201701/no-dopamine-is-not-addictive>.

McIver, William J., Jr. "Social Impact." The Columbia Encyclopedia, 6th Ed. 2018. Accessed December 10, 2018. <http://www.encyclopedia.com/computing/news-wires-white-papers-and-books/social-impact>.

Morby, Alice. "IKEA Assembly Made Easier through Augmented-reality App." Dezeen. March 25, 2018. Accessed November 23, 2018. <https://www.dezeen.com/2018/03/23/ikea-assembly-made-easier-through-augmented-reality-app/>.

Nell, Victor. "The Psychology of Reading for Pleasure: Needs and Gratifications." *Reading Research Quarterly* 23, no. 1 (Winter 1988): 6. Accessed October 24, 2018. doi:[http://links.jstor.org/sici?sici=0034-0553!898824\)23:12.0.CO;2-9](http://links.jstor.org/sici?sici=0034-0553!898824)23:12.0.CO;2-9).

Nerney, Chris. "'Vooks': The Future of Book Publishing?" – Adweek. October 01, 2009. Accessed October 10, 2018. <http://www.adweek.com/digital/vooks-the-future-of-book-publishing>.

"Papier Machine, the First Electronic Paper Toys by Panoplie." Panoplie. 2018. Accessed September 24, 2018. <https://panoplie.co/>.

Rich, Motoko. "Hybrid Books From Publishers Like Simon & Schuster Add Video and Web Features to Reading." *The New York Times*. September 30, 2009. Accessed October 10, 2018. <http://www.nytimes.com/2009/10/01/books/01book.html>.

Rodrigues, Joseph. "5 Tips To Maintaining A Strong Focus While Reading." *Iris Reading*. February 28, 2018. Accessed October 10, 2018. <http://www.irisreading.com/5-tips-to-maintaining-excellent-focus-while-you-are-reading>.

Schmandt - Besserat, Denise. "THE EVOLUTION OF WRITING." *THE EVOLUTION OF WRITING*, January 25, 2014, 1-15. Accessed October 3, 2018. <https://sites.utexas.edu/dsb/tokens/the-evolution-of-writing/>.

Schwab, Klaus. "The Fourth Industrial Revolution, by Klaus Schwab." *World Economic Forum*. 2017. Accessed October 25, 2018. <https://www.weforum.org/about/the-fourth-industrial-revolution-by-klaus-schwab>.

"Technology in Our Life Today and How It Has Changed | Updated for 2018." *Aging In Place*. November 16, 2018. Accessed November 11, 2018. <https://www.aginginplace.org/technology-in-our-life-today-and-how-it-has-changed/>.

Thorbecke, Christiana. "Woven." *Woven*. September 2, 2016. Accessed October 10, 2018. <https://woven.96problems.com/>.

"Why Read? Reason #6: Knowledge Is Power but Imagination Is More Valuable." *Multiple Intelligences -- Assessment*. May 20, 2015. Accessed October 14, 2018. <http://www.literacyworks.org/news/2015/5/20/why-read-reason-6-knowledge-is-power-but-imagination-is-more-valuable>.

Wolf, Maryanne. "Skim Reading Is the New Normal. The Effect on Society Is Profound | Maryanne Wolf." *The Guardian*. August 25, 2018. Accessed October 15, 2018. <http://www.theguardian.com/commentisfree/2018/aug/25/skim-reading-new-normal-maryanne-wolf>.