Aristotelian philosophy applied to interactive virtual media:

On the effects of transportation on the player and the practical applications of Virtual Realities.

By

Joshua Patterson

Oxford Brookes University

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Supervisory team – Helen de Cruz and Stephen Boulter

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Abstract

Virtual reality is a new technology that blurs the line between what a person feels is real and knows is fake; putting the audience 'inside' a piece of art, a new 'world' that we can experience (like real life) in a first-person perspective. This technology has come about through the development of interactive virtual media, the product of 'the evolution of poetry' that Aristotle discovered and explained. Poetry is something that can hold and transfer meaning, specifically it is anything that can offer or represent the 'what it is likeness' of a particular concept or truth, this is what I refer to when I use the term 'Poetry'. The concept of blurring the line between reality and fiction, gives rise to 'the paradox of fiction' and has been a component of art from its conception. We lose ourselves in a myth, a book, a song or a play, and we have emotions about imitations of (fictional) events (even though they are fictional), this losing oneself into poetry is what I will term 'Transportation'. Virtual realities achieve this and can make us feel like we are inside a piece of art, by fully taking control of our perspective (our experiences), by putting the control of the art's direction in our hands, and importantly, by captivating our full attention. What effects could this have on us as moral agents or as social beings?

Aristotle began art criticism in his *Poetics*, pioneering the philosophy of aesthetics and preparing philosophers for their own explorations of new mediums of art. I plan on continuing this work in an Aristotelian exploration of the use of interactive virtual media and the notion of transportation. Not only will I use the lessons learnt from Aristotle's work in *Poetics*, but will also consider an Aristotelian Eudemian framework when looking at the moral concerns of such an advanced form of poetry and the inherent ramifications of the 'habituation' that comes with its repetitive use. Such media is often seen as an unproductive and even sometimes damaging pastime, I will argue that not only does all poetry teach us in many ways, but interactive virtual media has the potential to teach us the 'what it is likeness' of particular experiences. It allows us to practice and attain 'know how' types of knowledge, this will be crucial to my Aristotelian philosophical exploration, and the revelations about the possible dispositional attitudes that could be gained from said practice in virtual environments.

I will back this up with a comprehensive explanation of recent revelations in cognitive science, proving evidence for the habituation mechanism and the importance of our implicit memory in our judgement making processes. I will conclude that interactive virtual media provides the perfect medium for transportation, which results in the accumulation of new implicit memories in the player (habituation), and said environments will be able to be utilised for a variety of applications, one possibly being the practice of virtuous activity (Eudemian ethics).

Contents

Preface

Our ancestors during the Pleistocene, anatomically and culturally modern *Homo sapiens (*or *Wise Man)* and their predecessors, informed each other and expressed themselves by representing. One of the earliest examples of representational art are the animal drawings in the Chauvet Cave, in France, commonly thought to be around thirty thousand years old. The creation of such art set *Homo sapiens* apart as it requires a higher order of consciousness. Such a level of imagination (and importantly their expression of imagination) helped them think and plan for the future, and learn from the past. I believe such an evolutionary pressure persisted because such sophisticated thinking was an advantage to our ancestors, as it allowed them to cooperate, plan and survive easier. One fascinating result of this was that it allowed us to create imaginary realms and motivated us to produce representational art. Importantly only such sophisticated minds are capable of symbolic thinking. I'm interested in how symbolic thinking and imaginary realms affect us today.

Aristotle focused on many different branches of science, one of which was the productive sciences, where he was studied the things that we create, and why we create such things. This concept included all art which he called poetry (not in the sense we commonly think of poetry or poets today) and I will also refer to all art as poetry in the same philosophical meaning of the word. Aristotle defined said poetry as: "Things that are or were the case, things that are said or thought to be the case and things that ought to be the case." (Aristotle, Poetics, P, p. 50) or in other words anything that could contain mimesis, a representational property. He discovered in his exploration of poetry that throughout the history of mankind, poetry has developed with us, moving from what many deem traditional artistic mediums (cave painting, sculpture, painting, music, literature or verse, theatre and comedy) to more modern artistic mediums (moving image, and interactive virtual media), or an evolution of poetry in other words.

I've always been fascinated by the modern poetry of today. From an early age it allowed me to experience wonderful stories and epic worlds safely from the comfort of my own home. Such stories are fundamentally important, not only to me but to everyone. We have told stories since the earliest days of language and it is how we construct our own self-image and persona in different environments (be it; literal, social or fictional). In fact, all our memories form the story of who we think we are. I am curious as to what the difference is between memories made in the real world to those in a fictional one? Whether it be through playing as children, through a form of traditional poetry like a book or a piece of music, or importantly from the use of modern interactive virtual media.

This is possible in part because of something known as the 'Paradox of fiction', in that we become so involved with poetry that sometimes we feel actual emotions about fictional characters and events, yet they are fictional. Why is it, or more importantly how is it, that we become so immersed in a story that we cry when our favourite character in a story dies. This is paradoxical because if we know that what we are experiencing is fake, and we only feel emotions for things that are real, how does Poetry affect us in such very real ways? I will explore this phenomenon known as the paradox of fiction in two distinct forms.

In this paper I will explore what fictional worlds are for, why are they so important to us, what identifies and ties them together, how exactly we store memory, and how the virtual experiences we have are equal to real ones. We represent possible worlds in so many ways using so many different mediums, I will explain what differences there are between said mediums, and if some are potentially 'superior to others' or more powerful. It became clear to me at a young age that while some simply engage us and captivate us, others immerse and engulf us beyond our own control via some form of transportation. My parents would have to drag me out of fictional worlds so that I could focus on my homework, or go to school. But recent research is changing attitudes, I was told as a child not to sit too close to the television, and now we give young children their own 'child friendly' tablets to captivate them into virtual worlds allowing them to play a variety of video games and watch other digital media at the

click of the screen. Attitudes have changed and now it is believed by some that such experiences can facilitate play and instigate wonder, helping to teach children.

I see interactive virtual media as a poetic medium that combines the visual and audio mediums with that of gameplay through virtual technology to create worlds that we can explore autonomously. The medium has only become a reality in the past century and is already the most profitable form of entertainment in the world. In 2016 the video game industry made 91 billion dollars in revenue (according to market researcher Super data). However, I'm not only interested philosophically in this medium because of my own experiences, nor am I because of its economic success, what I find most interesting about this new medium is that it breaks so many rules of traditional poetry, and in doing so could have created the best arena for behavioural change, something that concerned Aristotle a great deal.

This is because with interactive virtual media, the direct one-way relationship is gone between creator and audience, now we have a different story told from every player to every play-through of a specific game. No longer are we just talking about poetry and representation because video games are also games. Certain insights need to be taken into consideration because of this. Therefore, I will explore exactly what a game is, and what play (the essence and aim of any game) can do for us. I want to know why we play in the first place, even animals play, there must be some evolutionary benefit or even some mechanism that promotes, utilises and creates play in human biology.

Can Cognitive science offer the answers to this? I believe that it can, therefore I will be exploring revelations from cognitive science in Chapter 2. Such an advanced understanding of the inner workings of the brain can help us understand how we think and why we act, thus offering unique and accurate insights into not only why we play but also why we create and consume such poetry.

What is a video game to the audience in the first place? Well for most: "The game is fun, the game is a battle, if it's not fun why bother? If it's not a battle where is the fun? It's a test that you pass or a quest that you fail, a race against time where fun and battle always lock together. But the game is also something else, it's a journey, a

passport to new worlds, maybe even an odyssey, a look, a feel, an exploration. Close your focus and open your mind. But in the end its not where you can take your game, it is where your game can take you." (Reggie Fils Aime's Monologue at E3 2017, Nintendo of America)

This is what the incorporation of play has done to art. It has turned representation into simulation. Now with interactive virtual media, especially ones such as virtual reality and augmented reality, gone is the need for the suspension of disbelief and a merely interesting and revealing paradox of fiction. Today in some battle based games we find ourselves dragged into a story and instead of screaming when our favourite character in a film, book or play dies we scream 'No, I died!'. I feel this notion of 'transportation' needs academic attention. An integral concept in this paper, transportation is the process of becoming immersed in a fictional world, sometimes out of our control. But to what extent are we actually transported? I would argue that it is our consciousness that is transported and will return to this concept in Chapter 3.

At the beginning of their lifespan, video games were not considered to be of legitimate poetical status, then after time they became embraced as a new form of storytelling. But now after my own studies, and experience of the art form, I find myself questioning whether they in fact offer more than traditional poetry ever did. In a few hundred years, what could this medium become?

Poetry represents something that could be, has been, or even what ought to be. But video games simulate those experiences directly through ultimate representation of autonomy; the evolution of poetry has led to this. What is the difference between the anticipation of falling off a cliff in a simulation and falling off a cliff? Apart from our own experience the only difference is the actual death, I will have still felt the fear of the drop. This is my topic of research and why I am so interested in doing it. What can philosophy offer to the inquiry of such a modern phenomenon?

Aristotle's most notable work in relation to this topic revolves around the practical science of t*he Ethics*, human behaviour and productive science of the purpose and dynamics of poetry (or art). Aristotle was primarily concerned with useful philosophy.

He was interested in how the world works and how to use these truths to our advantage. He is one of the most influential philosophers in history and his philosophy is just as relevant today and to my current academic inquiry. Even though Aristotle lived in Ancient Greece, and studied ancient morality, life and behaviour. He studied ancient forms of poetry such as tragedy and epic. Aristotle began art criticism and he explored what poetry could do for us, and because of this, I can think of no better starting point to the study of the effects of interactive virtual media's poetry on the player, than Aristotelian Philosophy.

What follows is my own Aristotelian exploration of the ethical and aesthetical concerns of interactive virtual media such as virtual reality. To present and evaluate the thesis that: 'Interactive virtual media and Virtual Realities provide the perfect medium for transportation which results in the accumulation of new implicit memories in the user (Habituation)'. Concluding with a detailed understanding of the effect interactive virtual media has on us and its potential applications for good or bad. First in Chapter 1 I will provide a foundation for our exploration by presenting my own reading of Aristotelian Philosophy.

Chapter 1: The Philosopher, An Introduction to Aristotelian Philosophy

Aristotle (384 – 322 B: C: E) revolutionized philosophy, in turn becoming simply known as 'the philosopher'. A lot of his work and classifications are still used throughout the academic world and of course philosophy today. He is credited for inventing art criticism, but before all he is the champion of early empiricism. He promoted the authority of us as human agents, giving us both hope for development and responsibility for our actions. He gave us a meaning and aim to life, which for him was to simply achieve Eudemonia, refining ourselves to our best ability, achieving excellence (with hard work and a bit of luck), resulting in a complete happiness.

Aristotle enrolled in Plato's academy at the age of seventeen. Here he was taught by Plato himself, and the two became close friends. However, they differed in their philosophy, specifically within the subject of metaphysics and Aristotle's focus on the productive and practical sciences.

1: 1 Aristotelian Philosophy

Aristotelian philosophy proposes that our perceptions of the world (empirical sense) are reliable, that our senses do in most cases give us direct contact with the external world. Therefore, Aristotle does not rely on the existence of the universal forms as his mentor Plato did, in a way pioneering the empirical method. When Aristotle begins any philosophical endeavour, he begins by considering how the world appears to be, and why we should take what it appears to be as reliable. Aristotle also often addresses why we should not be exploring knowledge from a platonic and rationalist perspective (possibly out of respect and courtesy to his mentor and friend, and also to his academic origins at the Academy). Aristotle believes: "Human beings began to do

philosophy...because of wonder" (Ross, W. D. ,1981, Part 1.9). We become fascinated by our world, and we naturally then want/need to think about things that we are amazed or confused by. I believe this emphasis on the empirical world is one that stems from Aristotle's teleological frame of mind.

1: 1: 1 Aristotelian Teleology

Teleology is the study of the ends or purposes that things serve, and Aristotle believed that the best way to understand why things are the way they are is to understand what purpose they were designed to serve. Which implies that there is a reason for everything in the first place, including interactive virtual media and indeed all parts of a human life which Aristotle believed was organized and directed toward a final end. He defined this end as something that must be our *summum bonum (or Telos)*, that which all other actions aim. Aristotle held that because we are essentially rational (I will return to our 'rational' nature in Chapter 2), then rationality is our final cause, but to what end? If our *summum bonum* is to fulfil our rationality, Aristotle believed we act rationally so that in the end we can reach a state of peace and happiness, to do otherwise would easily be considered irrational: "Since all knowledge and every pursuit aim at some good, what do we take to be the end of political science-what is the highest of all practical goods? Well, so far as the name goes there is pretty general agreement.' It is happiness,' say both ordinary and cultured people; and they identify happiness with living well or doing well" (Aristotle The Nicomachean Ethics, pg. 7).

Aristotle's divided his philosophy into three separate categories: The Theoretical, which he practiced with his mentor Plato and then the Practical, and Productive sciences.

The Practical sciences attempt to understand action and the goodness of said action, for example ethics. Productive science looks at things such as art and the beautiful aspects of an object, be it actual aesthetical beauty or the excellence of something. Finally, both of these sciences involve knowledge being gained from the world around

us. This knowledge is easily accessible via our senses and experience empirical deriving for the Ancient Greek word *empeirea*, meaning experience.

The Theoretical science seeks what Aristotle deemed first knowledge like mathematics and metaphysics. Aristotle deemed this science as 'first knowledge', knowledge that can be gained from intrinsic thought and explorations of metaphysical arguments (innate knowledge) and we are born with the capacity to learn such knowledge, discovered trough theoretical science.

This is where an important distinction must be made, Aristotle was not what we see today as a modern empiricist. As he still saw value and understood and respected his mentor's teachings, he merely thought that productive and practical study were a better starting point for knowledge as those types are easier to access and experience over metaphysical knowledge. Therefore, in a way he was an empirical pioneer rather than modern empiricist.

I will use such Aristotelian philosophy as a foundation for my exploration of interactive virtual media. Applying it to the effects of transportation on the player, and the applications of virtual realities.

Primarily this is because I see no one better suited for the job of providing a foundation to a model of understanding than Aristotle. I, and countless others, see him as the most influential philosopher of all time, especially in the fields of Ethics and Aesthetics. As shown, his studies covered almost every logical endeavour from biology to poetics because he was interested in the purpose and function of everything (his teleological frame of mind). In Aristotelian philosophy, logic belongs to all sciences. It is the foundation of essential principles of the correct way to argue.

Of course, Aristotelian philosophy can mean a lot of things. When I say it from now on however, I will specifically be focusing on is his Eudemian ethical emphasis, his championing of the epistemological approach and his work on the productive science of aesthetics.

1: 2 An exploration of *The Poetics*

Aristotle began art criticism in his *Poetics,* pioneering the philosophy of aesthetics and preparing philosophers for their own explorations of new mediums of art: "What is poetry? How many kinds are there, and what are their specific effects?" (Aristotle, *Poetics*, p. 17). He defined poetry as anything that can represent: "Things that are or were the case, things that are said or thought to be the case and things that ought to be the case." (Aristotle, *Poetics,* p. 50). Aristotle called this function of poetry 'mimesis'. And he examined the two poetic mediums of his time, Epic and Tragedy. This can clear up some recent arguments in aesthetics about modern art and genre. Such as Marcel Duchamp's notorious *Fountain* which is fundamentally a urinal. Whatever intentions that Duchamp had when he 'created' it, it has gone on to spark an intellectual debate about the validity of all instances of representation, by representing a urinal absolutely and placing it in an area where it can be studied aesthetically. Such modern artistic genres move away from traditional emphasis on narrative and focus more on abstraction. This may have been controversial to many but by Aristotle's definition all poetry needs to do is be mimetic, truly representational of some way the world is, should or could be. Such a simple definition could bring us full circle and allow us to return to the original pursuit of art criticism, to discover the nature, function and purpose of poetry in the first place.

However, he didn't think we participated in the experiencing of imitations simply for entertainment value. Aristotle thinks the goal of poetry is: "Learning, that is, figuring out what each thing is" (Aristotle, *Poetics*, P, p. 20). This is because such representations come: "Naturally to human beings from childhood, and so does the universal pleasure in representations. Indeed, this marks off humans; from other animals, man is prone to representations than all others, and learns all his earliest lessons from representations." (Aristotle, *Poetics*, p. 20).

Aristotle offers as evidence of this: "Even when things are painful to look upon- corpses, for instance, or the shapes of the most revolting animals - we take pleasure in viewing highly realistic images of them." (Aristotle, *Poetics,* p. 20). In that it must be the case that: "Learning is delightful not only to philosophers but to ordinary people

as well." (Aristotle, *Poetics,* p. 20). And this is why Aristotle believes mimesis is why we enjoy, produce and participate in poetry. There are many other opinions as to why we enjoy highly realistic or mimetic representations and I will explore more in Chapter 2.

Aristotle however made some allusions to there being a second function of poetry. In his view this was to relieve its audience by the conjuring of emotion, a sort of harmless simulation which lead to 'catharsis', literally translated to purification. We can see this when Aristotle highlights that in the experiencing of the medium of tragedy, the evoking of emotions such as pity and fear lead to: "The purification of such emotions." (Aristotle, *Poetics,* p. 23). 'Purification' means loosely getting rid of the worst parts and keeping the good parts of something.

But we cannot know for sure that this is what he meant as it is a term that Aristotle never properly defined. It could be that Aristotle did not mean this in his use of the word 'purification' but instead meant wonder, as he actually states that: "Such an effect is best produced when the events come on us by surprise; and the effect is heightened when, at the same time, they follow as cause and effect. The Tragic Wonder will then be greater than if they happened of themselves or by accident; for even coincidences are most striking when they have an air of design." (Aristotle, Poetics, p. 28). Wonder then appears as the true aim of 'tragic poetry'. It could be the case then that Aristotle's use of the word catharsis in other works is not a technical reference to literal purification but a metaphor for wonder, so maybe a feeling, like being washed, or cleansed or simply being put through something, but nothing more than such a metaphor.

In fact, Aristotle says comparatively more about imitation (mimesis) than catharsis. Aristotle thinks that imitation is deeply ingrained in human development. We engage in imitation from an early age, as we learn how to speak, and then also later, in the gaining of character by treating others as role models. In both these ways, we imitate because we learn and grow by imitation, learning is natural to us. As we grow up, imitation becomes representation and depiction. Poetry doesn't copy reality, but

instead anything that might be reality, by engaging universal themes, imitation and representation Poetry teaches us just as it did when we were children.

1: 2: 1 The Characteristics of a good plot

Aristotle offered somewhat prescriptive advice to playwrights, by offering what he deemed the characteristics of a 'good plot'. I believe that the characteristics of a good plot is relevant to my current exploration as if Aristotle believed that the plot of poetry needed certain characteristics in order to be 'good', he essentially is saying that for poetry to be effective (by nature, mimetic), it needs to be created well, achieving the following characteristics in its creation. These are characteristics we will be able to attribute to interactive virtual experiences.

First, is the characteristic of 'completeness', in which Aristotle states, something that seems perfectly obvious now, that a good plot needs a well thought out beginning, middle and an end. The point is that a good plot will treat its beginning, middle and ending as constructions aimed towards offering a complete as possible plot, offering a certain containment to the plot.

Second is the characteristic of 'scale'. A plot must feature the correct amount of story. If not enough then the plot would feel too short and incomplete, too long and the plot can seem drawn out and diluted.

Third is the characteristic of 'unity'. Aristotle explains that: "An infinity of things happen to a single individual does not all of which constitute unity." (Aristotle, *Poetics,* p. 27). Knowing everything that ever happened to a character is not important to the plot. Only some of the things the character does are unified under a specific plot, and so a good plot will be as unified as possible, as anything not integral to the telling of the story hurts the plot.

For interactive virtual media, there is a phenomenon with regards to unity, an important thing to Aristotle as an integral characteristic of a good plot. Interactive virtual media put the pace, tone and direction of the plot in the player's hands. When

we inhabit virtual poetical world, we are autonomously exploring them like no poetry before. However, said autonomy could be a detriment to the poetry, without ultimate control over the poetry's pace and the order in which it is experienced are no longer in the hands of the artist. Therefore, no longer is the artist in direct contact with our emotional heartstrings. I Instead they produce worlds that have possibilities and the player takes control of the poetry's unity, and scale. Perhaps autonomy is exactly what makes interactive virtual media so immersive and capable of transportation, and letting go of complete control, by giving control to the player allows for high levels of immersion. In this sense, perhaps the invention of interactive virtual media signals a giant leap in the evolution of poetic mediums. I will explore this further in Chapter 3.

The fourth and final characteristic of a good plot is both 'universality and necessity'. Poetry isn't concerned with what happened, but instead what could happen: "The poet and the historian differ not in that one writes in meter and the other not; for one could put the writings of Herodotus into verse and they would be none the less history, with or without meter. The difference resides in this: the one speaks of what has happened, and the other of what might be. Accordingly, Poetry is more philosophical and more momentous than History. The poet speaks more of the universal, while the historian speaks of particulars". (Aristotle, *Poetics,* p. 28). In this sense, from Aristotelian teleology we can derive that Aristotle saw poetry as something akin to Plato's philosophy, focusing on the universals such as beauty. And we have already discussed how Aristotle believed such first knowledge is allusive and harder to obtain than empirical knowledge.

In fact, Aristotle believed even if the poet is criticised for failing to represent correctly, that they are not at fault of anything: "The criterion of correctness is not the same in poetry as in ethics." (Aristotle, *Poetics*, p. 51). An interesting quote and relevant to my current exploration, nevertheless, he believes the poet can only make error in two ways, intrinsically, where: "The poet meant to represent something and fails through incompetence." (Aristotle, *Poetics*, p. 51), and incidentally, where the poet: "Deliberately chooses to misrepresent." (Aristotle, *Poetics*, p. 51). Aristotle seems to think that the responsibility of the poet is to create representations and nothing

more, especially not to have a specific ethical agenda in mind. The poet is somehow above the criterion of correctness applied in the 'real world'.

This line of enquiry has interesting implications on first reading to Interactive virtual media. If the criterion of correctness is not the same of poetics than ethics. One might assume then, that we can do whatever we want with interactive virtual media and virtual realities. This is not the case however, as such poetry of today has evolved. I will argue in chapter 3 that interactive virtual media has become more that just poetry, that the criterion of correctness may indeed now be the same for poetics as that of ethics. As experiences 'in' poetry can equate to ones gained from the real world.

1: 2: 2 The Evolution of Poetry and the 'Superiority' of a medium

Aristotle mentions the exponential growth of the expectations we put on poets: "Because in the past there have been good poets in each genre, people expect a present-day poet to surpass each of them in his own particular excellence." (Aristotle, *Poetics,* p. 39). As a specific medium fully evolves and becomes mature, poets are tasked with incorporating as many possible different types of techniques in one piece.

This brings me onto an important point, in that Aristotle studied an archaic medium of poetry, epic, which was essentially literature, but before writing was available such fiction was spread by travelling artists who recited whole epics by memory. He also contrasted this medium with a new and developed medium, tragedy. Which is different in its form, using actors, stages and props along with a chorus to represent visually, certain instances of mimesis about the world. Aristotle was fascinated by this evolution of poetic mediums. What was the difference between the two? Could one be greater than the other?

In fact, with the evolution of poetry (in its techniques and in its progression of mediums) came, in Aristotle's opinion, the greater and more diverse ability to represent ways in which the world could, should or ought to be like. The last thing that Aristotle does is to explain the logical inferiority of epic to tragedy, and this will

be fundamental in our Aristotelian understanding of the possible superiority of a medium. He suggests that: “There is nothing epic has that tragedy does not have, it can even use the same metre. But tragedy has a substantial extra element in the form of music, which is a source of intense pleasure.” (Aristotle, *Poetics,* p. 55). So, Aristotle deemed tragedy greater than epic because it could do everything epic could and more. He seems to value the potential of a medium, and therefore deems tragedy superior to epic, as the medium of tragedy had more tools to use, in fact it had all of the tools that the epic medium had and more.

While looking at the evolutionary path that poetry has taken from tragedy to interactive virtual media, it is clear to me that the same development has taken place. Interactive virtual media has all the tools at its disposal that earlier mediums (music, cut-scenes and screen based text) had and yet the medium also offers features such as autonomy and play, creating an incredible sense of transportation. This evolution of poetry in my opinion results in the representations becoming more vivid, realistic and immersive, adding to the possible representational properties that can be created through said media. As poetic mediums evolve they become capable of achieving greater representation, and Aristotle believed this was necessary, in that we expect artists to surpass those that came before and new mediums are created to accommodate this, once a medium becomes stale it is only matter of time before people expect something new. (Aristotle, *Poetics, p. 55*)

Through what is essentially a purely informative exploration so far has resulted in a definition of what good characteristics of poetry are, what its teleological functions are, and even the effect that poetry has on us as we experience it, namely teaching us, and evolving to better do so, by immersing us creating the paradox of fiction.

I will now continue to explore Aristotelian philosophy by considering his Eudemian Philosophy of ethics. To lay the groundwork for the rest of this exploration.

1: 3 An exploration of *The Ethics*

The Ethics offers what I will refer to as a 'Eudemian' philosophy which is fundamentally an explanation for our value systems and dispositions. The practical science also offers a guide for how to develop said dispositions into excellent ones (to become habitually virtuous). *The Ethics* may be a misleading and ambiguous name, the Ancient Greek for *'The Ethics'* actually can translate to '*matters to do with character'* or simply '*moral excellence'*. *The Ethics* is not telling us how to be morally good people or even how to be happy, but how to live successful human lives and to fulfil. Happiness is simply a side effect.

1: 3: 1 Eudemian Ethics: an introduction

Aristotle was intrigued by what creates happiness and what makes a person morally good, how do some people live good lives as good people, and others live as Aristotle would put it, 'sub-optimal lives'. To help with this pursuit he created a normative ethical framework to understand how to be a good person known as Eudemian ethics and/or virtue ethics. He deemed certain actions as virtuous or in other words good for you, and other actions as vicious. These vices were either deficiencies of related virtuous behaviour or excessiveness of certain behaviours. Today we value many personality traits, but being a good person doesn't seem to be at the top of our priorities in contemporary life, at least not after we surpass childhood. Aristotle thought it should be our highest priority, to master the skill of being a good person, and in doing so we would somehow become happier and feel less anxiety and difficulty over tough decisions in life.

Well, to find the best way perform a virtuous action, Aristotle would apply the 'doctrine of the mean'. For example, if one wanted to be brave or courageous one could be excessive in their attempt at this virtue and become rash or they could be deficiently brave and become cowardly.

Aristotle explains the 'doctrine of the mean' by stating: "In anything continuous and divisible it is possible to take a part which is greater or less than, or equal to, the remainder; and that in relation either the thing divided or to us. The equal part is a sort of mean between excess and deficiency; and I call mean in relation to the thing whatever is equidistant from the extremes, which is one and the same for everybody; but I call mean in relation to us that which is neither excessive nor deficient, and this is not one and the same for all." (Aristotle, *The Ethics,* pg. 40). So, Aristotle believed the doctrine of the mean (the middle ground between excessive) must be applied to virtuous activity and Aristotle offers some examples of such moral and intellectual virtues. (Aristotle, *The Ethics*, book 2)

In even the simplest of tasks we learn that there is a way to overdo our attempts, for example putting too much wood on a fire can suffocate it, even though our intention was to nurture it. Similarly, we can also at the other end of the excessive, not put enough wood on and we can lose the fire. I will explore this concept further throughout the second half of Chapter 2.

In the third and fourth book Aristotle goes onto give examples of virtues and their excessive spectrums, such as; Liberality: the right attitude towards money. Attitudes towards honour on a small scale: ambition, or insufficient ambitiousness and 'the nameless mean'. Conversational qualities: wit, a fine line between buffoonery and boorishness. Aristotle also discussed other virtuous activity in more depth such as; patience in relation to anger and rage, socialness and the importance of friends and their types, and finally justice and the correct way of attaining it. (Aristotle, *The Ethics*, book 4) (Aristotle, *The Ethics*, book 3)

No one starts out perfect and what's important is that if one wanted to become a good person then one should participate or practice in virtuous activities to develop their own skill at being an excellent person (able to easily avoid being excessive or deficient in virtuous activity in the future). In fact, Aristotle states that the reason we read *The Ethics* in the first place is not to know what good people are like, but to act as good people act. (Aristotle, *The Ethics, pg. 40*). We want to refine our dispositions

and become good, and achieve excellence in living because we are all rational human beings.

In short by a concept of habituation (learning through repetitive action) one will flourish or grow (Aristotle uses the Ancient Greek word 'Eudemonia') into that type of person (and instinctively act in a virtuous way). Most importantly Aristotle saw that within all of us is the intrinsic ability to 'learn how to be a good person or to be taught through our own experiences. (Aristotle, *The Ethics, pg.40*)

This is just a brief introduction into the Eudemian ethics and will explore the scientific validity of it further in Chapter 2, first however I will explore Aristotle's logical reasoning for such a framework of human behaviour.

1: 3: 2 The Object of Life

In the first book of *The Ethics*, 'the Object of Life', Aristotle states that there cannot be a universal good or a form of the good, as Plato suggested in his theory of the forms. He states that there cannot be a common good that permeates through every good action and can be identified in each. Aristotle believes that a supreme good can be found in the truths we know about the world, separate from the 'first science' that we come to know through education and reason as his mentor and friend Plato had focused so much on.

In doing this Aristotelian philosophy began as he believed that while it's true that: "A knowledge of the good is of great importance to us for the conduct of our lives" (Aristotle, *The Ethics,* pg. 4).

But it cannot be found through purely metaphysical science. The actual implicit knowledge of the supreme good must be examined and discovered, after all: "Are we not more likely to achieve our aim if we have a target? If this is so, we must try to describe at least in outline, what the good really is." (Aristotle *The Ethics*, pg. 4). To us: "The question, 'what should my life be like?', may seem too particular to be a properly ethical question. Shouldn't ethics be about duty, or rights, or the good,

rather than about my life?" (Annas, 1993, pg. 27). I believe that the question 'what do I want my life to be like?' is an ethical question, as the answer is (according to Aristotle's *summum bonum*) a 'good' one, and for it to be a good one I need to practice at life, so to speak.

Aristotle believed that: "Every art and every investigation, and similarly every action and pursuit, is considered to aim at some good. Hence the good has been rightly defined as 'that which all things aim'. Clearly however, there is some difference between the ends at which they aim, some are activities and others results distinct from the activities." (Aristotle*, The Ethics*, pg. 3). However: "It makes no difference whether the ends of the actions are the activities themselves or something apart from them…. If then, our activities have some end which we want for its own sake, and for the sake of which we want all other ends…it is clear that this must be the good, that is, the supreme good." (Aristotle *The Ethics,* pg. 4). Aristotle believes we perform actions for the sake of higher things, but this process cannot go on for ever (infinite progression). For example, I exercise to be fit, because I want to stay healthy, because I want to live a long life, and so on. Now Aristotle wanted to discover the actual supreme good, what our actions are trying to get us to. In the long run, ultimately where does this chain of goals end.

Aristotle believed that the final good must be our *summum bonum* or (the highest good, for its own sake); and in being such that we do not wish for it because of other things we may gain from it. This should make us complete and fulfilled, in that we are left complete after obtaining it, wanting for nothing more. Aristotle therefore believed that the pursuit of pleasure, and of honour, both failed to adhere to these criteria. So, what is the supreme good? I will argue it is not found in some measure of pleasure or pain, nor that it is in some moral code.

1: 3: 3 What is the supreme good?

Aristotle held that: "Since all knowledge and every pursuit aim at some good, what do we take to be the end of political science-what is the highest of all practical goods?

Well, so far as the name goes there is pretty general agreement.' It is happiness,' say both ordinary and cultured people; and they identify happiness with living well or doing well" (Aristotle *The Ethics*, pg. 7). Then Aristotle claims that the good, the ultimate end to every purposeful action in human life, 'happiness', is a virtuous activity of the soul and celebrates it as the *summum bonum* of Eudemian ethics, therefore we should explore the distinction between pleasure and happiness.

In book two, 'Moral Goodness' Aristotle explores what virtue actually is ontologically**.** It must be said that Aristotle believed that our souls were divided into three categories, feeling, capacity and disposition (or habits). He also believed that virtue (excellence) is a character trait, and character traits are just part of an individual's soul. And that if virtue can be found in one part of our mind (soul), then it must be one of these three parts; a disposition, a feeling, or a capacity. He states: "Moral goodness… is the result of habit… This fact makes it obvious that none of the moral virtues is endangered in us by nature, since nothing that is what it is by nature can be made to behave differently by habituation. For instance, a stone which has a natural tendency downwards, cannot be habituated to rise, however long you train it by throwing it in the air…", instead the virtues: "Full development in us is due to habit" (Aristotle, *The Ethics,* pg.31)

Aristotle then decides to determine what virtues are, and he believes that one can do so through a process of elimination. For example, when examining our emotions, it becomes clear we cannot control them, and if someone has a feeling of hate, they cannot be held accountable for said feelings, because they have no control over them. Therefore, because people can't be held accountable for their emotions, only their actions upon said feelings, and virtues must not be feelings.

Aristotle believed virtue was not a capacity either. This is because even though we are all basically capable of the same things, we do not all actually perform at the height of said potential (we can all be terrible people) and a lot of people do not end up living well and achieving happiness. And so, it is not our ability to be good, or our capacity for it, where we can find virtue. Because, just because we can do something doesn't mean we do. Therefore, by the process of elimination (per Aristotle's beliefs about

the three parts of the souls and the nature of virtuous habituation), the only thing that virtue could be is a disposition. (Aristotle, *The Ethics*). This is why Aristotle concludes our virtues come from our character.

1: 3: 4 Eudemonia

Eudemonia (the goal of Eudemian philosophy) is achieved, according to Aristotle, by realizing our natures and emotions fully and by reaching the full potential of our human capacities by holding the disposition for this to be the case. Aristotle's philosophy is what I will call Eudemian because it maintains that Eudemonia depends on virtue. For Aristotle if you want to 'get good' at living well, you must first want to, and second you must wonder how one learns such a skill, and ultimately you must practice. Since virtue is a habit-forming activity, we are responsible for the choices that we make based on personal vice and virtue. How virtuous a person is, determines how they will behave in each situation. So, it appears Aristotle believes our habits and whole character, is simply us engaging in a practical activity (that of the exercising of our skill at achieving happiness and living well), as he defines virtues as dispositions and eudemonia is the achieving of excellent disposition.

This is the foundation of Eudemian philosophy; to obtain happiness we must practice virtuous activity and habitually we will become virtuous, and achieve excellence in the skill of living well and being happy. To master the skill of knowing what is morally right, one simply needs to be sufficiently practiced in virtuous activity.

Annas believes that instead of seeing virtues as rules, principles or even a *summum bonum* (seeing as recent research has concluded that we are not completely rational beings and errors can occur in our judgements based on biases), instead we should simply see virtues as practical moral skills. (Annas, 1995)

It must also be stated that Annas and even Aristotle knew that if one miraculously gains all the necessary virtues one may still not achieve eudemonia, 'god laughs at the plans of man' and some luck is always required. Some children die before they even have the chance to achieve eudemonia, through no fault of their own, likewise others

are severely handicapped in their ability to achieve eudemonia by other means of bad luck. Despite this Aristotle believed that through his Eudemian ethics (and with a bit of luck), he had offered the best path that one can take to hopefully be able to achieve eudemonia.

1: 3: 5 The Student becomes the Master

Until now, I have been focusing primarily on the surviving works of Aristotle to discuss and explore Eudemian ethics. Which as I have discussed, aims to explain that we can gain virtues through practice.

There are four approaches to how through practice we can gain virtue, approaches that build upon one another to explain how the novice of virtue can become a master or expert of virtue. I will briefly explain the four approaches.

First is the approach that practicing 'virtue gives us an account' of the how-to type knowledge (qualia), we gain virtue by experiencing it. For Annas, habituation not only allows one the ability to perform actions virtuously but also it allows us to understand why such actions are virtuous. This is 'the ability to convey why what is done is done' and defines Eudemian practice as a skill, or techne rather than some intuition or gut feeling or emperia. Because only the skilled person can actually give an account of why they do what they do.

The second approach to Eudemian ethics is that of 'Virtue and the particularity of right actions'. This is the notion that performing virtuous actions is required for the acquisition of virtue because identifying the right action cannot be organized into strict rules and principles. Instead, virtue requires knowledge of what to do in particular situations.

The third approach is 'Virtue as a sensitivity to reasons for action', one originating from McDowell who held that knowledge of the virtues is actually more like a form of a sensitivity to the reasons for possible actions. The notion that this 'ethical

sensibility' detects our reasons for action. (Mcdowell, Mind, Virtue and Reason1979, pg. 332)

So, on McDowell's view, as we develop virtue, we develop the capacity to see what action is called for in a particular situation. But we only can do this because we can see the different reasons one might have for acting in different ways. McDowell believes that this knowledge of motives in turn motivates one to perform the action that one sees as virtuous. (Mcdowell, Mind, Virtue and Reason 1979, pg. 332)

And the fourth approach to habituation is one Fridland offers, 'Virtue as automatic response'. This is a notion specifically important to my own exploration of implicit memory (that I will return to in Chapter 2). The notion that if one is well practiced in the virtues then one actually does the right thing automatically. This is possible as we will explore later by the creation of an internalized framework that transcends declarative thought and principles, allowing one to respond automatically to particular moral situations. (Fridland, 2017, pg.6)

Annas believes this is the end result of the achievement of Eudemonia, that through habituation one can become an expert in virtue and effortlessly be able to act virtuously leading to a state of happiness and optimum living. We can do this through repeated exposure to situations that involve moral action. (Annas, 2011 pg.30)

These four approaches to habituation provide an excellent outline of the different ways that we could indeed gain habituation. One distinction that I would like to make is that we are beginning to talk about virtue as a skill, something that through habitation we could become masters of. And this will allow us to attain something Fridland calls 'Expert attention', something she believes to be the second (often ignored) half of a full account of Eudemian ethics (the previous four approaches being the first half). Fridland therefore explores what exactly distinguishes a master from a novice. (Fridland, 2017, pg.7)

By examining the sports psychology of motor expertise, Fridland found one feature that emerges is that experts are able to focus their attention to assess and collect the information necessary to make informed judgements. Fridland believes by

understanding how agents use motor expertise to become better sportsman one can understand how we use such automatic learning to become better at approaching moral judgements (that we also need to gather information to help our judgements) this is because these findings apply across the skills and domains of all expertise. (Fridland, 2017, pg. 10)

Fridland concludes that experts are better at gathering information than novices because of the fact that experts know where to look. This allows experts to fix their attention to fewer places. If Eudemian ethics holds that that virtue is a practical skill and sports psychology has shown that a skilled athlete's ability to focus attention and gather information quicker, then Fridland concludes its reasonable to believe that such a capacity develops in moral expertise as well. (Fridland, 2017 pg. 14)

This has only been an introduction into the questions that can arise form Eudemian philosophy's position on how we actually learn and acquire virtue. I will return back to this topic in Chapter 2 when discussing the different processes of the mind (automatic and implicit ones), alongside the conscious declarative ones, concluding with three different types of implicit learning that we can understand.

1: 3: 6 What Aristotle wanted to be done with Eudemian ethics

In the tenth and final book of *The Ethics,* 'Pleasure and the Life of Happiness' Aristotle explores the importance of pleasure in ethics. Here we can make an important distinction, the distinction between a momentary definition of happiness, and a happiness that derives from doing something well and achieving one's purpose, to be good. In that, although Eudemian philosophy aims at the achievement of some form of happiness, we have already established that this means more than what we generally regard as happiness (something that hedonistic philosophy aims to achieve simply through pleasure).

Likewise, one can distance Eudemian Philosophy from Utilitarianism in the same sense. Utilitarianism cares about actions and results, categorising past examples and offering ways to calculate a moral action based on the balance between the

happiness achieved and the pain avoided. Aristotle instead cared about character, and our habits which lead and measure one's ability to achieve excellence (Eudemonia). For him there were countless examples that could come up in one's life where a previous rule or calculation will be ineffective or insufficient for one to make the correct and virtuous judgement. Instead one must have practised in his virtuous behaviour that one will instinctively know what is right in any given situation. In many ways Aristotle avoids the pitfalls of so many other normative ethics by allowing for the unknown, and more importantly preparing us for difficult choices we will face.

Aristotle concludes by informing us what to do with Eudemian philosophy once we have read *The Ethics*. In his opinion we should take it into politics, which to Aristotle is another practical science. Ethical theory characterises the human life; Political theory characterises the forms of social organization. He stated: "Assuming then, that we have given (in outline), a sufficient account of happiness and the several virtues, and also friendship and pleasure, may we regard our undertaking as now complete? Or is it the correct view that (as we have been saying) in the case of conduct the end consists not in gaining theoretical knowledge of the several points at issue, but rather in putting our knowledge into practice? In that case, it is not enough to know about goodness; we must endeavour to possess and use it, or adopt any other means to become good ourselves" (Aristotle, *The Ethics,* pg. 277). This quote is important to my current explorations as it outlines Aristotelian philosophies endeavour, to use the knowledge we gain to become the best versions of ourselves, augmented by our expertise. Today we already create rules to avoid injustice occurring in our society, we quantify our worth or goodness in the happiness we have created in this world and from the cruelty and pain we have helped avoid, but these approaches are not enough to truly understand the powerful tool for good that interactive virtual media can be.

Ethically Aristotle was not focused on deontological rules nor did he believe goodness was quantifiable and that the goodness of an action could be calculated prior to any specific moment. Instead he saw that our actions and experience make us who we

are, good or bad. He believed we are creatures of habit, and that actions we get used to performing only enforce our behaviour in the future.

Once again, Eudemian ethics isn't telling us how to be morally good or even how to be happy, but how to live successful lives and to fulfil ourselves, which in turn enable us to be morally good in our actions and achieve happiness. Becoming virtuous seems like a perfectly rational pursuit and to do so will logically make virtuous choices clearer and easy to make. Achieving Eudemonia does seem like the *summum bonum* of human existence (at least when we are being rational), and if virtues are habits then it follows that any study of how the human brain works in relation to our habits is of fundamental worth to the study of Eudemian ethics.

Lessons from Chapter 1

Aristotle has started my exploration into the effects of transportation on the user by defining poetry and its purpose. He has also given me an ethical framework in which to understand the development of human virtue in that of his Eudemian Philosophy. He has proven to be a great starting point in my exploration.

Aristotle wanted to study art or poetry's techniques, function and properties. He believed we take pleasure in experiencing representations, and that the aim of poetry is to represent and imitate reality (mimesis). He offered characteristics of a good plot and many other observations on art criticism and in doing so he foreshadowed an evolution of poetic mediums that culminated today in the creation of interactive virtual media. Interactive virtual media surpasses the evolution of poetry and he outlined unknowingly how it would face aesthetic challenges, while featuring incredible poetic potential.

I have presented a Eudemian ethical view that virtues are dispositions (habits or skills), which position our behaviour in the mean of the virtuous spectrum and, that through habituation, we can become excellent people and achieve Eudemonia. Aristotle concluded that the criterion of correctness is different for traditional poetry

than it is to ethics, but I have suggested that it may not be so for interactive virtual media. Finally, for Aristotle, the next step for Eudemian ethics is for it to be applied to the practical sciences of societal governance, in order to obtain the good tangibly, and use it, or adopt any other means to become good ourselves.

Chapter 2 – The Nature of the Beast

In this chapter, I will be exploring revelations that have arisen from the modern sciences about; who we are, why we are like we are, and what we can do about it, I believe this is the best way to bring Aristotelian philosophy into the 21st century. If Aristotelian philosophy can be applied to the use of interactive virtual media, in order to help us practice virtuous activity and achieve eudemonia, then it must first be cross examined with what the most recent scientific evidence and theory has to say when it comes to the nature of our learning processes and also of our ability and dependence on virtual realities.

In this exploration it is my endeavour to apply Aristotelian philosophy to the use of interactive virtual media, to focus on the transportation of its players, and to explore the possible practical applications (in an Aristotelian sense specifically) that can be derived from such an exploration.

This methodology may seem merely explorative, however my end goal is to understand how Aristotelian philosophy can be used to understand both the aesthetic and ethical opportunities that interactive virtual media such as Virtual Realities have to offer.

I believe that by exploring both the aesthetical and ethical arguments combined with recent cognitive and anthropological science will provide a clear pathway to explain how this can be done. I will conclude my exploration with a proposal of a thesis that interactive virtual media provides the perfect vehicle for transportation of the player to virtual reality, which is the perfect arena for the practice of virtual behaviours.

I will have arrived at this thesis because of the exploration I have taken from Aristotle's work through to my own and will be fully prepared to discuss said thesis in

the last half of the final chapter. I believe this methodology to be sound as so many different fields of study must be understood at the same time, while focusing on such a new and uncommonly known about topic, that of interactive virtual media's potential uses.

If all of these fields are explored then by the end of this journey we will be in the only position where it is possible to talk about the possible applications of transportation on the player from the use of interactive virtual media.

Therefore, In the first part of this chapter I will explore how we came to be and what events had to occur to bring us to the modern era and a 'poetic revolution', reinforcing our explorations of poetics from Chapter 1.

In the second part I will explore what cognitive science can reveal about how we think, how we learn and how all that I explore in this chapter can be seen as supporting arguments for Aristotelian (specifically Eudemian) philosophy, that I have outlined in Chapter 1. After all Aristotle championed the empirical method, and I believe that he would want to know all that modern science has to offer on the truth about the workings of the brain, and specifically the various teleological functions it serves.

2: 1 The Player with a Thousand Faces

The subject of our examination is the effects of transportation on the player, and therefore our exploration must strive to understand what the player is (which of course is a human), and how we operate. The starting point of this line of enquiry is naturally in my opinion the anthropological and historical study of the evolution of humans and how they came to function as they currently do. Only then will we be able to apply both Aristotelian philosophy and said lessons to the effects of transportation of said 'player' into virtual worlds.

I will discover that every individual needs the ability to change their persona, actions and responses (behaviour) in accordance with their current environments, and that

these personas determine how we act in any given situation (depending on our prior experience in certain relatable environments).

This will have fundamental repercussions in my later explorations of interactive virtual realities, a completely unique type of environment with vast possibilities and intricacies.

2: 1: 1 The evolution of anatomically and culturally modern *Homo sapiens*

Humans (members of the genus Homo) first appeared around two and a half million years ago. Archaic humans loved, played, formed close friendships just like us. But so did many other animals, and yet look at how far we have come since then. We have surpassed the law of the jungle, sit at the top of the food chain, have discovered amazing technology and medicine, developed the most sophisticated culture in history and have achieved the unthinkable (Dunbar, 2014, pg.18). There must be something special about us. I, as many others have, am going to argue that it lies in our cognition. What we can do inside our minds to understand and learn things about our existence and external environment. It is this that has: "Given us Culture with a capital 'C', culture that produces literature and art." (Dunbar, 2014, pg.18)

So, what allows cultural activity is, of course, our big brains, and this is what distinguishes us from the other great apes: Some archaeologists such as Rightmire argue that there is an upwards trend throughout the evolutionary changes leading up to culturally and anatomically modern Homo sapiens brains trebled in size from their ape-like beginnings. (Rightmire, 2004). It must be said however that this is not a consistent trend, evolution doesn't have a plan and it is important to point out there are exceptions to this upward swing, including *Homo sapiens* and Homo Floresiensis, both of which are among the most recent Human evolutions, yet have comparatively smaller brains than of earlier members of the genus (most likely because the increase in brain size is an incredibly costly one). However, seen on the grand scale of the last 6 million years, hominin brain size has been on a steady upswing which: "Seems to suggest that there has been continuous upwards pressure for bigger and bigger brains

over time. (Dunbar, 2014, pg.20)**.** But why has there been a (relatively) continuous pressure for larger brains?

2: 1: 2 A Social Brain

That evolution should select for larger brains may seem obvious, it is only with high intelligence that we have been able to achieve so much and this must be the reason why evolution selected for larger brains, because it has been so helpful for our species progress. However, if high intelligence is a continuous selective process then why are we the only species that has achieved such a brain? The fact is that high intelligence is a massive drain on the body. It required vast amounts of physiological changes and consumes a large amount of energy. We pay for our superior brains by having to search for more food and our muscles have atrophied. Despite being smarter, we are weaker than our cousins the chimpanzees.

The Social Brain Hypothesis attempts to explain the cognitive revolution that birthed culture, and in turn poetry, originally proposed by the psychologists Andy Whiten and Dick Byrne as 'Machiavellian Intelligence'. One hypothesis states that the reason we developed larger brains (in some areas) was because of the social demands of living in larger groups, to answer this demand we developed high intelligence (theory of mind, learned patterns of behaviours and the ability to care for others). (Whiten. Byrne, 1988)

However, as previously hinted at, this growth in our brain size came at a terrible cost, death in childbirth became a major hazard for both the mother and the child. Evolution favours the forming of strong social ties. What is fascinating to my own studies is that since humans are born underdeveloped, they can be educated and socialised to a far greater extent than any other animals.

There are arguments that we are born with certain dispositions and this notion has come to be known as the genetic leash. However, the reach of such genes has limits and there is a continued debate over to what actual extent genes hold human culture 'on a leash'. Evolutionary psychologists and socio-biologists argue that this leash is

short. We cannot be completely programmed out of our innate dispositions yet they don't affect our ability to develop, too much.

But if we are truly able to be 'spun, stretched and shaped' then we can indeed become habitually virtuous too, even if our genetic leash tries to work against us at first, I will continue discussions of the validity of habituation in the second part of this chapter.

2: 1: 3 Intentionality

Our origins lie in a hunter-gather, nomadic way of life, it was only until the agrarian revolution that took place around 12,000 – 8,000 years ago that we departed from said way of life. The agrarian revolution is characterized by two innovations: the switch from nomadism to settled life, and the agricultural revolution. Both opened up the possibility for evolving ever larger communities, leading up to the nation states of today. And with this came incredibly complex social pressures and dangers than any species had faced before. (Dunbar, 2009)

How is it then that we can create social bonds and eventually be able to work with strangers in a common goal? Our best guess as to what this entails is what has become known as our ability to imagine another person's Intentionality. Intentionality gets its name because it is what someone intentions are. And practically speaking, we can recognize that other individuals have minds like their own. Therefore, our ability to imagine other's Intentionality is signified by the capacity to use words like *believe, imagine* and *want*. It is the capacity to take an intentional stance or view, with high intelligence comes the ability to form a hierarchy of mental states known as the *orders of intentionality*. To be fully conscious is to be aware of contents of one's own mind, I would refer to this as first order intentionality. The capacity to have a belief about someone else's belief then constitutes second order intentionality (there are two mind states understood). After that, there are third, fourth, fifth and so on orders of intentionality. The further down the orders of intentionality the higher intelligence is needed. So, we need to be able to understand

what having a mind is like (be conscious of our remembering self) and to be able to assume or **imagine** what another person is thinking. This was essential to living in larger social communities and without it we would not have reached the agrarian revolution, let alone the modern era. Imagination will begin to play a larger and larger part of my own exploration in this chapter, such a promotion of imagined experiences and memories will provide validity to the argument that virtual experiences can be equitable to others, real or imagined.

I see no reason not to believe that it was for the need to understand higher orders of intentionality that was one of the factors that promoted the growth of the brain size, leading to anatomically modern *Homo sapiens* (Dunbar, 2014, pg.294). Dunbar believes that: "Higher order mentalizing allow us to imagine the future consequences of our behaviour and hence foresee the terrible things that might befall us in ways that other animals simply cannot do." (Dunbar, 2014, pg.294). Our high order of intelligence led to our imagination, however our imagination could be the source of a lot of the anxiety and unhappiness that we feel. If this is true it may also prove to be integral to our gaining of Eudemonia through virtual realities, as if the need to foresee things that could happen to us created the need for our minds, then this is one of the reasons why we love to engage in poetry and play, to practise this faculty of our imagination. This high intelligence is what birthed what I will call the 'Poetic Revolution'.

2: 1: 4 A Poetic Revolution: Language and Storytelling, the Virtual Realities of the Imagination

The Human language is significantly more advanced than any other species with forms of primitive language and the cognitive functions that are required of such language enabled a Poetic Revolution. This revolution built upon the fact that language allows us to shift some aspects of social bonding from a physical channel (Grooming) to a vocal channel, (Bonding) allowing us to build larger communities. Anthropologists believe that language might do this in three different ways. One is by telling each other how we see the world (creating a common world-view or 'big

story'); the second is through story-telling (stories about who we are and where we have come from); and the third is through making people laugh by telling jokes. (Dunbar, 2014, pg.270). All of which are different examples of poetry, be it myth or religion (some cosmological perspective of reality), fiction or comedy.

Therefore, language and in turn poetry are fundamentally important to living in large societies. In Dunbar's somewhat controversial opinion, when in a community larger than one hundred and fifty people we begin to lose track of who is who and poetry and language are needed to maintain relations with people who are effectively strangers: "Telling a story - whether about what happened in history, or about the ancestors, or who we are and where we came from, or about the people that live beyond the horizon, or the inhabitants of a spirit world that none of us can experience directly – creates a sense of community by binding us into a network of people who share a common view of the world." (Dunbar, 2014, pg.270) Dunbar's research highlights the fact that there is a limit to the amount of people we can create relationships with, when we are surrounded by people we don't recognise we feel more uncomfortable than when we know everyone around us.

I will attempt to explain why this is in the second part of this chapter by showing that in every social environment we habitually learn how to act and which persona to perform (in a form of a dual process of implicit and explicit judgements). When we are surrounded by strangers, we have no previous experience to rely on to offer us any suggestion of how to act. Just as Aristotle knew was the case with any unfamiliar situation be it one of moral ambiguity or of any other situation, we need to practice finding the perfect mean in our actions and behaviours in order to become masterful at skilfully manoeuvring said situations.

Three different versions of the importance of poetry have been proposed by Evolutionary Anthropology, and all rely on language and the understanding of imagined 'virtual worlds'. The first being the obvious, 'language for the exchange of information'. The second is 'language for making formal arrangements'. And the third version is 'language for mate attraction and retention'... In short, all three of the benefits of gaining superior language were the key to living in larger groups (with a

certain degree of order, comfortability and peace), by allowing us to know where we fit in the story of the group (what arrangements exist, what information is shared and who is close with who). (Dunbar, 2014, pg.19).

With language came stories, and in turn religion, both require language for their performance and transmission. What is specifically important about both to my explorations is languages: “Require us to live in a virtual world, the virtual world of our minds. In both cases, we have to be able to imagine that another world exists that is different to, and separate from, the world we experience on an everyday basis. We have to be able to detach ourselves from the physical world, and mentally step back from it. Only when we can do this are we able to wonder whether the world has to be the way it is and why, or imagine other parallel worlds that might exist, whether these are the fictional worlds of storytelling or para-fictional spirit worlds. These peculiar forms of cognitive activity are not trivial evolutionary by-products, but capacities that play – and have played- a fundamental role in human evolution.” (Dunbar, 2014, pg.19). Dunbar outlines the exact first steps that lead to the appreciation of mimesis in art, and modern poetry today. Without language and the ability to detach ourselves via our amazing imaginations from the real world to inhabit virtual ones, we wouldn’t be able to understand our position in the world and our environments, this creates our own perception of what the overarching story is.

Therefore, the success of mankind is largely down to this Poetical Revolution, where we gained the ability to create shared imagined orders (as described by Harari), eventually on a global scale. An Imagined order is any rule that we have imagined, be it religious law, or the rules of rock, paper, scissors, they are imaginary and subjective. I believe it is not the fact that language allows us to share information about the world that is the reason why we have made so much progress as a species but instead it’s the ability to transmit information about things that do not exist at all. Humans can only exist in small societies because of their cognitive ability to adapt to different environments be it physical, social or importantly virtual.

This would lead to fiction having a fundamental impact on human lives from there onwards: “Myths, it transpired are stronger than anyone could have imagined. When

the Agricultural Revolution opened opportunities for the creation of crowded cities and mighty empires, people invented stories about great gods, motherlands and joint stock companies to provide the needed social links. While human evolution was crawling at its snail's pace, the human imagination was building astounding networks of mass cooperation, unlike any other ever seen on earth." (Harari, 2011, pg.115). Through the existence of basic law, and through stories of gods and primitive religions mankind achieved networks of mass co-operation.

It appears today that Aristotle was justified in his championing of the study of poetry. The study of myths and our imagination indeed are worth investigation. Ever since the Poetical Revolution *Homo sapiens* have thus been living in a dual reality, both the real tangible reality we live in, and the virtual one that we are transported into via our capacity to imagine and be captivated by experiences that guide said imagination. Poetry is the productive science of creating the experience of imagined realities and I will argue that with the advent of interactive virtual media, we have become capable of intelligently designing said virtual realities, allowing imagined realities to become even more desirable, powerful and purposeful than that of our actual realities.

Poetry is the creation of virtual realities (representations of possible realities), and in said environments we can develop, learn and flourish just as in the real world. Even in traditional poetry this is possible, de Cruz and de Smedt explore the paradox of fiction that I mentioned at the beginning of my exploration. They explore how 'Social novels' reveal and represent unfair social circumstances, and in doing so have motivated social reforms. Such imagined realities are capable of changing the stories we tell ourselves about our reality. (de Cruz and de Smedt, 2017). When engaging in all forms of poetry we consciously think about the greater universal and unchanging, beautiful and terrible truths, both of existence, and human life. But in video games we do more than just think and I will return to this point in Chapter 3.

An important point to make about all imagined virtual realities and imagined orders is that they are of course inter-subjective, by this I mean that they exist between multiple conscious minds that share common subjective opinions about said imagined orders. I will continue to explore this as I believe if we want to use imagined orders

and realities to instigate the practice of virtue, then we need to understand how they are created, how they continue to exist and how they can change.

In the imagination of *Homo sapiens,* and in the myths we collectively invent and tell one another, we create inter-subjective imagined orders as basic laws we tell ourselves and each other (and our children) to achieve certain things.

For example, we need shared imagined orders to play most types of games. To get into a game with strangers we need to know the set of rules that they are playing by. We can only play games with complete strangers because they have all learned an identical set of ideas, these ideas are entirely imaginary, but if we share them we can play the game.

Imagination still seems to play a huge part in keeping us together and tied to truths about the world, and Poetry has flourished in the modern era, birthing in my opinion the most advanced and 'game-changing' medium, interactive virtual media. Imagine the good interactive virtual media could do by facilitating a platform for imagined communities.

What I find interesting is the effect that virtual realities progression is having on our expectations of our actual reality. Today we compare our lives to ones of celebrities and fictional characters and are bombarded with advertisements for products that we need to attain greater levels of happiness. So, living in created virtual worlds could also 'fulfil' our expectations of life more proficiently than the real world. I spent my whole childhood practicing saving the world from alien invasions and absolute evil (by playing and being transported into video games), and I became good at it, now I must confront a normal life without the grand treasure, excitement, clear purpose and sense of adventure that I have come to expect. Virtual worlds can offer a sense of progress, self-expression and achievement that real life so often supresses and so I would conclude that they may be an even better place to practice virtuous behaviour.

This ends the first part of this chapter, we have discovered the true origins of man and the social pressures that ended up developing the immense brain we boast today, I have also explored functions our brains feature, primarily ones that helped us

to understand, trust and collaborate with other members of our species, and in turn the power that our imagination holds over our perspectives of ourselves, the world around us and things to expect in the future.

In the second part of this chapter I will be exploring the truth about ourselves from a cognitive scientist's perspective, outlining how we function, how we make judgements and ultimately how we learn by experience.

2: 2 The Science of Cognition

A lot of what we understand today about the cognition in the brain comes from highly advanced technology that allows us to scan the activity of the brain, (PET, EEG and fMRI scans for example) all in order to explore the workings of the brain. But before these methods were available the science of cognition focused heavily on case studies of specific injuries and defects. One is worth exploring to begin this part of this exploration. Henry Molaison, known widely as H.M provided amazing insights into how our brain works and specifically contributed greatly to the study of memory, shedding light on exactly how memories are stored and what they are. (Scoville, W.B. and Milner, B., 1957)

As a child, H.M cracked his skull in an accident and endured years of seizures, losing control of bodily functions and blacking out. So, in a desperate attempt to fix this H.M received a lobectomy on September 1st 1953 by Dr William Schoville, using a hand crank and a drill saw, a renowned daredevil neurosurgeon specifically known for risky surgeries.

During this lobectomy Schoville removed a large part of H.M's hippocampus to relieve him of his seizures. After the surgery, H.M was cured, but at a cost, he could no longer create new memories and lost many previous ones. After this H.M was cared for at his parents' house and a PhD student named Brenda Milner was sent to the house to conduct a series of tests and interviews. One of Milner's findings shed light on the

fact that although H.M couldn't retain new memories, he could still retain information long enough to finish a sentence. When Milner gave him a random number he could remember it for 15 minutes by repeating it over and over, but after 5 minutes of forgetting the number he had forgot the test had taken place completely. We had previously believed that all memories where the same in a monolithic framework, yet this case shows that there can be different types of memory and that each must use different parts of the brain. (Scoville, W.B. and Milner, B., 1957)

This taught us that the hippocampus was important to the creation of new memories. For the first-time scientists started to be able to identify the exact processes in which we create memories. Today we know that in fact that there is a distinction between short term and long-term memory and that memory formation involves several steps. After sensory data is temporarily transcribed by neurons in the cortex, it travels to the hippocampus where the cortical neural connections are strengthened by special proteins. If the experience was strong enough or we habitually recall it, the hippocampus sends the memory from the short term back to the cortex, the long term permanent memory. Because H.M's hippocampus had been removed, as soon as the memory was sent to be strengthened and consolidated it was instead dissolved and lost. (Scoville, W.B. and Milner, B., 1957).

This is how we learn, how we become our future different selves (when we look back we often say things like if only I knew then what I do now). This is only possible due to the different types of memory in the brain, and I say different types not only referring to short and long term, but to declarative and implicit types of memory, processes or systems in the brain. By declarative memory I am referring to our conscious selves and what we are aware of, and by implicit I am referring to our unconscious selves. This may come across as science-fiction on a first reading, but there are a lot of underlying reasons for our behaviour, causes that we are not conscious of that you could say come from a 'stranger in us'.

2: 2: 1 Declarative memory and implicit memory: an introduction

In a famous experiment, Milner asked H.M to trace a star between two outlines of pre-drawn stars but he had to look at what he was doing in a mirror. This is initially difficult for anyone and H.M was just as bad but we would eventually be able to get better at the task through practice. One would assume that H.M would continue to be bad because he could not retain memory of previous attempts at the experiment. Yet surprisingly H.M improved at this task over time and repeated trials. His unconscious motor sensors remembered what the conscious mind had forgotten, this means that Milner had discovered that there is such a thing as procedural memory (knowing how) separate from declarative memory (knowing that) such as names and facts. (Milner, B., Corkin, S. and Teuber, H.L., 1968, pg. 215 - 234)

These two memory systems are also known as implicit and explicit memories and provide the scientific backing to the two separate learning mechanisms that Aristotle explored. Implicit memories are formed by repetitive experience and examples are driving a car, riding a bike and any habits that we acquire. We are not conscious of invoking implicit memories. Explicit memories on the other hand are things that we can state, such as; events, names, equations, plans, our internal monologue and our declarative thought's.

Memories are extremely important to our behaviour and personalities. A young baby has few memories, but an extremely powerful brain from a functional perspective. The acquisition of memories shapes the personality of the child as it grows. Learning what to do, how to behave, how to communicate is all a function of acquiring both long-term explicit and powerful implicit memory.

How do these memories form? The implicit (procedural) and explicit (declarative) memory systems depend on different parts of the brain. For explicit memory, when we experience something, the sensory information travels through a network of neurons first being stored in short term memory, then it is transferred to long term memory from the hippocampus to other storage units in other parts of the brain. This is the mechanism in which declarative (explicit) memories are stored long term, making a permanent impact on us. Such declarative memories are designed to

require only one input to become stored. However procedural (implicit) memories are formed when we habitually become better at performing certain tasks or attempting to achieve a certain goal from repetitive action. This is what Aristotle described as he stated: “Moral goodness… is the result of habit… This fact makes it obvious that none of the moral virtues is endangered in us by nature, since nothing that is what it is by nature can be made to behave differently by habituation. For instance, a stone which has a natural tendency downwards, cannot be habituated to rise, however long you train it by throwing it in the air…”, instead the virtues: “Full development in us is due to habit.” (Aristotle, *The Ethics,* pg.31)

We now know that such procedural memory (know how) is reliant on two different brain systems, namely the basal ganglia and the cerebellum. Therefore H.M was still able to get better at the star experiment, because these where not removed.

Until recently it was thought that procedural memory was mainly related to physical activity and that the declarative memory was related to cognition. However, counter-intuitively this has been shown to be incorrect. Our behaviour, decision making, general salience and awareness is also driven mainly by implicit memory, and only a small part of our cognition is driven by the declarative mechanisms. Due to the fact that we are not fully aware of implicit memory mechanisms we are only really aware of this smaller part and have underestimated such mechanisms of our cognition.

To gain a deeper understanding of the difference between our procedural memory and our declarative or conscious memory I will explore Kahneman’s, Stanovich and West’s work on ‘dual-processes or ‘dual systems’. Eudemian ethics claims that through habituation (the accumulation of implicit memories of success and failure) we can become experts at virtuous activity. Which will help us become virtuous characters who are intuitively good and ones that are most likely to achieve Eudemonia and so we will see that Eudemian ethics fits in line with Kahneman, Stanovich and West’s research.

2: 2: 2 The Stranger in us, an automatic self – Implicit memory

Cognitive scientists see the mind as a multitude of parts and mechanisms. Kahneman's early work focused on the unexperienced biases we show when making judgements, he showed us that we are not always rational (sometimes we fail to even have a *summum bonum*). His later work revolved around studying this implicit side of our decision making, he will call it a 'system' alongside our conscious system of thinking, other scholars have distinguished their terminology to instead call these 'processes' of thinking (Stanovich and West, 2000). I feel this field of work is vital to the character based Eudemian approach. If it is true that it is both processes of thinking that contribute to decision making, then it is in studying both of these processes that we can understand how best to continue a Eudemian approach. Especially if one of these processes (implicit memory) mirrors what Aristotle called dispositions.

Kahneman presents the basic elements of such a two-system approach to judgement and choice. It elaborates the distinction between the automatic operations of what he names 'System 1' and the controlled operations of a familiar 'System 2', building upon work by Stanovich and West. (Stanovich and West, 2000)

Where Stanovich and West prefer not to characterize the two ways of thinking, one fast and the other slow. They prefer the term dual-process as a way to talk about two different methods of determining judgement as it actually describes modules/processes in the brain. 'System 1 and 2' are just metaphors for ways of talking about declarative thinking and implicit thinking. This is worth noting, and therefore when I talk about the two I personally prefer to say implicit memory as the accumulation of data for the unconscious memory to draw from (implicitly) and conscious or declarative thinking which we are aware of. (Kahneman, 2011, pg. 29)

Kahneman 'invites us' to: "Think of the two systems as agents within the mind, with their own individual personalities, abilities, and limitations." (Kahneman, 2011, pg.29). Even Kahneman understands that this is a fiction, and is merely a way of understanding the workings of the brain. He explains this as he states: "The use of such language is considered a sin in the professional circles in which I travel, because

it seems to explain the thoughts and actions of a person by the thoughts and actions of little people inside the person's head… I must make it absolutely clear that they are fictitious characters. Systems 1 and 2 are not systems in the standard sense of entities with interacting aspects or parts. And there is no new part of the brain that either of the systems would call home." (Kahneman, 2011, pg. 29)

As previously suggested, it may be hard to believe, that there is a whole part of you that you are completely unaware of, a system that learns without your conscious self being involved: The fact is our mind has implicit thoughts and gains new memories because it has been shaped by evolution to provide a 'continuous assessment of the main problems that we must solve to survive': "How are things going? Is there a threat of a major opportunity? Is everything normal? Should I approach or avoid?" (Kahneman, 2011, pg.90)

Thinking involves a lot of the power of the body and thus it also requires an 'at rest' mode, in which declarative thought is hardly being engaged and we are just operating on a sort of automatic mode enabled by implicit thought.

Although System 2 believes itself to be where the action is, the automatic implicit System 1, is, in Kahneman's view, the unsung hero and motivator of our explicit cognitive functions. He describes implicit thought as effortlessly originating impressions and feelings that are the main sources of explicit cognition and deliberate choices or declarative thought: "The automatic operations of System 1 generate surprisingly complex patterns of ideas, but only the slower System 2 can construct thought in an orderly series of steps." (Kahneman, 2011, pg.22). Examples of implicit memories are the ability to read at pace, speak at pace, catch balls, interpret social mood, and instigate patterns of behaviour.

Both types of thinking, declarative and implicit have different learning mechanisms, and I will return to this point culminating in a third type of learning only attainable through an understanding of both types of thinking and learning. There is no single brain area involved in expertise (curiously, there is a brain network involved in learning a skill, called the novice network. (Bilalić, Langner, Ulrich and Grodd, 2011)

Furthermore, implicit mental events occur automatically and require little or no effort and include innate skills that we share with other animals. Eudemian philosophy is more accurate than we ever imagined, and judgement is a skill that we can becomes experts at. It follows that we effortlessly could be able to (from intuition) choose the most virtuous action in a given moment because we have trained our implicit memory so well, that it offers us the correct answer by using our character as its source. This line of enquiry will lead to a three-part understanding of memory and learning, that I will apply in the final chapter of this exploration.

We are constantly adopting the suggestions of our impressions when we act on our desires however what about when our explicit thought is grabbing for control. For example, if I want to practice some virtuous decision making. In Kahneman's view there is a struggle that our declarative selves will have to engage in: "It is the mark of effortful activities that they interfere with each other, which is why it is difficult or impossible to conduct several at once." (Kahneman, 2011, pg.25). In fact, intense explicit focusing on a task can make people effectively blind, even to stimuli that normally attract attention. The most dramatic demonstration was offered by Chabris and Simons in their book *The Invisible Gorilla*. In their research, they constructed a short film of two teams passing a ball, one team wearing white shirts, the other wearing black. Viewers of the film are instructed to count the number of passes made by the white team, ignoring the black players. Halfway through the video a gorilla crosses the court. The gorilla is in view for 9 seconds. Many thousands of people have seen the video, and about half of them do not notice anything unusual. What is important however is that no one who watches the video without the task would miss the gorilla, it is the task that makes you blind as your focus is narrowed. (Chabris and Simons, 1999, pg. 1059-1074)

Seeing and orienting are automatic functions of implicit memory, but they depend on the allocation of attention. In Kahneman's opinion: "The gorilla study illustrates two important facts about our minds: we can be blind to the obvious, and we are also blind to our blindness." (Kahneman, 2011, pg.24). It is only when we are surprised by something that declarative thought is mobilized when it detects an error about to be

made. Kahneman believes that one of the main jobs of declarative thought is to overcome the impulses created by implicit memory, and our explicit selves oversee self-control. This almost brings us full circle back to Chapter 1, the Eudemian pursuit is all about learning self-control of our excessive or deficient moral judgements. Implicit memory provides the impressions that often turn into beliefs, and is the source of impulses that often effect your choices: “It offers a tacit interpretation of what happens to you and around you, linking the present with the recent past and with the expectations about the near future. (Kahneman, 2011, pg.58). And this I would propose to Aristotle is the function that the brain serves today. The brain contains the model of the world then instantly evaluates events as normal or surprising, it is the source of your rapid intuitive judgements.

Just as Aristotle believed, we can sometimes be confused and incorrect, and implicit memory operates automatically and cannot be turned off at will. Biases affect our judgement which can sometimes be irrational. What can we do but constantly be paying attention to our impulses and intuitions at any given moment and be watching out for any biases we are bringing into any given situation. In my opinion continuous vigilance is not a good way to live your life, most of the time, and it is certainly impractical. Declarative thought is much too slow and inefficient to serve as a substitute for implicit memory all the time. What I have learnt from this research is that ultimately, we are the result of the interaction of both the explicit aware self and the implicit experiencing self. If we apply this logic the practice of Eudemian ethics we can now infer that the practising of the virtues involves some form of hierarchy to types of learning. We’ve always known about our explicit selves and now we can explain the automatic learning of our unconscious mind.

2: 2: 3 Eudemian Ethics Renewed Validity

I believe that Cognitive Science is relevant and useful to Eudemian philosophy, and indeed revitalises its value and importance in the ethical discussions of today, including my own exploration of the effects of transportation on the player of interactive virtual media. Indeed, implicit memories are the origin of much that we

do. Our thoughts and actions are routinely guided by them and generally are on the mark and said implicit memory offers said suggestions effortlessly in a fraction of a second.

I want to ask the question, 'what do the different processes of the mind do when entering a virtual world?' And because virtual worlds are intelligently designed, how can we create worlds that help mould players into virtuous people, helping them achieve eudemonia (without having to worry about the manic luck of the world). If we hope to learn to become virtuous people, we really mean we want to become skilled at the craft of ethics. Therefore, it requires: "A regular environment, an adequate opportunity to practice, and rapid and unequivocal feedback about the correctness of thoughts and actions. When these conditions are fulfilled, skill eventually develops, and the intuitive judgements and choices that quickly come to mind will most likely be accurate." (Kahneman, 2011, pg.416) I believe that intelligently designed virtual worlds can offer all of this as will return to this line of enquiry in Chapter 3.

After all this is the work of implicit memory, and a marker of skilled performance is the ability to deal with difficult judgements swiftly and efficiently. By this logic if one was to practise virtuous behaviour on the minefield of cognitive illusions and errors that we face when we encounter a tough moral judgement, we will become skilled in it and our implicit memory will be more prepared., With less effort, we will (implicitly) conjure better solutions, and in turn our explicit self will experience less anxiety and indecision over the judgement that must be made. Scientifically, Eudemian philosophy checks out as a way to prepare us for the ethical challenges we face. And I believe this is mainly because of implicit memory.

I believe we must use this understanding to achieve a sort of meta-learning, that I refer to as supervised learning. To do this is to improve judgements and decisions by recognizing when you are in a 'cognitive minefield', and to slow down, and use declarative memory to figure out what to do (keeping in mind what you know about the stranger in you). I will now go on to explain three different types of implicit learning that we must understand before we can utilise them in interactive virtual media.

2: 2: 4 Three types of implicit learning

Cognitive science tells us that for procedural (Implicit) memory there are three mechanisms, this was explored by Doya. The first is called unsupervised learning and is simply that if you exercise one pathway in the brain it becomes better and faster, through habituation. The second is called reward or reinforced learning and can be characterised by simple pleasure from repeated performance of the activity, as would have been the case with Pavlov's dogs salivating when the dinner bell rang. The third and the most relevant to our hypotheses is supervised learning. This is where a goal is repeatedly attempted, and a pattern of all relevant neural functions associated with the goal is optimised over time by way of a feedback loop (using both the other types of learning purposefully). Any error causes the offending associations to be weakened, and any success causes the associations to be strengthened. It is important to recognise that for this type of learning there must be the context of a goal present. (Doya, K, 1999)

The associations that can be formed into a retrievable pattern consist of almost all neural functions including conscious cognition, emotion, social response, complex language and also the full motor system. Hence human beings are able to mix an extremely complex series of behaviours into a repeatable pattern, as long as there is an explicit or implicit goal. The goals might just be to socially conform (implicit and unconscious), or to catch a cricket ball (intentional and conscious). Rituals such as dancing and music can be combined with social patterns to reinforce group patterns of behaviour, we might term this 'culture'. (Barlow, H.B, 1989)

This perspective looks at the mind as a goal driven machine, and for every goal there is a model, a response that is the current best response to any particular situation. The attainment of a goal (say the catching of a ball) strengthens the pattern, and failure weakens it. Therefore, the brain can optimise a complex set of behaviours against a specific goal. It is easiest to see this in the physical world. Any great athlete or sports player has optimised the complex physical movements of thousands of

muscles to achieve a single manoeuvre. I propose that we also optimise our behavioural and ethical side too, in respect of social goals.

Therefore, I conclude that *Homo sapiens* are capable of three different types of implicit learning.

These are;

Reinforcement learning- Where one is given a goal for doing something, most likely some rewards (prompting some to confuse or define as reward/Dopaminergic learning).

Unsupervised learning- Also known as statistical learning, occurs automatically by just frequent occurrence. The brain creates self-organizing networks that automatically learn to classify and associate things.

Supervised learning- Error-dependent learning where we know what we are trying to achieve and we get an error signal to indicate how close our action was to achieving its target. Therefore, we can try to improve our performance over time, for example, trying to trace out a shape, or find the proportionally correct response to an action leading to the display of virtue (doctrine of the mean).

2: 2: 5 An introduction to Flow

We have discussed how declarative thinking uses up considerable energy in order to override the impulses of implicit thinking, and so one might assume that supervised learning would take up a vast amount of energy and attention. However, such learning doesn't have to always be energy draining, and people sometimes expend considerable effort for long periods of time without having to exert willpower. Say while practicing their art form, sport or technical science. The psychologist Csikszentmihalyi studied this state of effortless attending, and the name he proposed for it 'Flow' has caught on. People who experience 'Flow' describe it as a state of effortless concentration so deep Csikszentmihalyi has called it an 'optimal experience'. (Csikszentmihalyi, 1975)

In Kahneman's opinion: "Flow neatly separates the two forms of effort: concentration on the task and the deliberate control of attention… In a state of flow, however, maintaining focused attention on these absorbing activities requires no exertion of self-control, thereby freeing our resources to be directed at the task at hand." (Kahneman, 2011, pg.41). Flow seems to be the use of declarative thought to supervise implicit learning effortlessly due to some feeling of freedom or playfulness (fun). I would like to ask if we could induce flow into the practice of the virtues? Specifically, with the help of immersive (innately fun) interactive virtual media. I will return to this concept in Chapter 3.

I have explored what the player is in this chapter; using lessons learned from anthropology and the science of cognition I have gained a modern understanding of the inner working and evolution of the player's brain. I have done this so that I may ask what effects transportation into virtual realities can have, and to explore the applications of such virtual realities that we are transported into. This is the central question to my exploration, and I now feel prepared to begin to answer it.

Lessons from Chapter 2

In this chapter I have explored the origins of *Homo sapiens*, our cultural evolution and the events that lead to the modern era. I have explored modern scientific revelations in cognitive science that provide evidence or Aristotelian philosophy in Chapter 1. I believe that an understanding of the implicit brain can aid in developing a Eudemian programme of supervised learning, in an Aristotelian endeavour. Such an approach would be the best foundation for understanding the effects and applications of transportation on the player of interactive virtual media into intelligently designed virtual realities.

In this chapter I have learnt that; the evolution of the human mind came (among a multitude of different factors) from evolutionary selective pressures of living in large communities and the need to gain advanced orders of intentionality and the inhibiting of our emotions. This created Culture through language, and storytelling

lead to what I call a Poetical Revolution where we used myths and language to create large scale poetry which instilled shared experiences and inter-subjective imagined orders to many individual minds. Without the Poetical Revolution, we wouldn't be able to play games. After doing this, we gained the ability to intelligently design virtual worlds.

I then explored how Cognitive science can offer evidence to Eudemian Philosophy. Then I discovered that there are two types of self, the automatic implicit functions of implicit memory, and the effortful conscious explicit functions of declarative thinking. I have explored the interactions of the two types of memory and thinking, and discovered that declarative thinking requires a great deal of energy and focus to subdue implicit memory, and this can leave us blind. I have offered an introduction into the concept of 'Flow' as the effortless practice of skill, and asked could we harness Flow in Eudemian Philosophy? In order to achieve Eudemian flourishing more proficiently. Just as sportsman become masters of their sports.

This chapter has shown that Eudemian philosophy has survived the test of time and shown that it accurately describes why we do what we do. Promoting it as a relevant field of study today and a great foundation for the explanation of the effects of transportation on the player. Now that it has been unified with modern cognitive science and explained by anthropological and historical study. I believe we can move forward with our exploration understanding that the brain utilises three different forms of learning; unsupervised, reinforcement and supervised.

I will proceed in the final chapter of my exploration to examine the nature and definition of interactive virtual media, bringing with me lessons learned in this chapter about the true dual-nature of the players mind and memory.

Chapter 3 – An Aristotelian Exploration of Virtual Realities

I have explored Aristotelian philosophy and the science of cognition, I have done so as an attempt to provide a foundation of research, one that allows us to continue to answer the central purpose of this exploration, to apply Aristotelian philosophy to interactive virtual media, specifically to explore the effects of transportation on the player and the practical applications of Virtual Realities. I hope to now be able to predict and explain said effects because of an understanding I have gained of our dual process way of thinking, in that implicit memory effects our judgement just as much, if not more so, than our declarative thought. This is the driving force behind our adopted persona, behaviours, intentions and often our biases in any given situation.

This could be seen as something philosophers have known for centuries. Even Aristotle would have been taught Plato's allegory of the chariot from the man himself. The allegory of the chariot attempts to explain the working of the soul (Plato's concept of our nature and the driving source behind our behaviour).

"First the charioteer of the human soul drives a pair, and secondly one of the horses is noble and of noble breed, but the other quite the opposite in breed and character. Therefore, in our case the driving is necessarily difficult and troublesome." (Plato, *Pheadrus*)

The Charioteer represents intellect, reason, or the part of the soul that must (declaratively) guide the soul to truth; one horse represents rational or moral impulse, while the other represents the soul's irrational passions, appetites and intuitive biases. The Charioteer directs the entire chariot/soul, trying to stop the horses from going different ways, and to proceed towards enlightenment. Plato describes a 'great circuit' which souls make as they follow the gods in the path of enlightenment. Those few souls which are fully enlightened are able to see the world

of the forms in all its glory and also to know themselves fully (both their declarative and implicit selves). (Plato, *Pheadrus*)

With such an understanding of how habituation occurs, could we design interactive virtual media to provide a simulation of moral practice where we could develop our knowledge of virtue, ultimately helping us achieve Eudemonia?

I will argue that virtual realities provide the best vehicle for mind change through the notion that through transportation, implicit memories can be gained. As we have previously discussed, memory isn't just a record of our past, but a driving force for our behaviour in the future, therefore Eudemian ethics can be applied to modern poetry to determine whether the criterion of correctness actually is the same for the poet and the ethics of today.

In this Chapter I will explore in a poetical sense what video games are, before moving onto how they practically can provide a vehicle for inducing 'mind change' (or the accumulation of new implicit and declarative memory) through advanced transportation, and if designed intelligently, can hypothetically help us attain Eudemonia.

3:1 The Characteristics of Play and the Forms of Games

I have previously mentioned that interactive virtual media is no longer just poetry, the medium also incorporates play (interactivity) and the study of play is a great start for applying the productive science of poetics to the 'videogame'.

Huizinga discussed the importance of the play element in culture and society. He saw it as a necessary part of both because it is an unavoidable action for us. I will examine whether this is the reason why videogames have been so successful. Because they provide a new arena (or virtual world) in which we can have 'fun' (something akin to 'Flow' in that it doesn't require strenuous thought), which according to Huizinga, is an unavoidable desire for us.

Huizinga believes he can explain why this is because of the fact that: “Animals have not waited for man to teach them their playing. Here we have at once a very important point; even in its simplest forms on the animal level, play is more than a mere physiological phenomenon or a psychological reflex…In play there is something ‘at play’ which transcends the immediate needs of life and imparts meaning to the action.” (Huizinga, 1938, p. 1).

Therefore, Huizinga believed play must have some biological purpose. Instead of something imagined by humans. He shows this when he states: “Play cannot be denied. You can deny, if you like, nearly all abstractions: Justice, Beauty, Truth, Goodness, Mind, and God. You can deny seriousness, but not play.” (Huizinga, 1938, p. 3). I have discussed previously that since a Poetical Revolution we have been living in a dual-reality, that of the objective, and that of poetry. Huizinga believes this also, in that: “In giving expression to life, man creates a second, poetic world alongside the world of nature.” (Huizinga, 1938, p. 4). Later in this chapter I will ask how we could utlilise this poetic world for Eudemian ethical pursuits.

For now, I would like to ask what exactly is play? We all have a loose concept of it, as everyone has played in their life, however to understand what play really is I believe we must examine what Huizinga deems four key characteristics.

First, play is a voluntary activity, it has a characteristic of freedom. Play is not work, it can be deferred or suspended at any time and is never a task. We must want to play a game before we can actually engage in playfulness, but what advantage is there to wanting to be playful? Huizinga believes that people: “Must play because their instinct drives them to it and because it serves to develop their bodily faculties, and their powers of selection.” (Huizinga, 1938, p. 8). We enjoy playing games because it is a fun way to get better at something, that will have transferable skills (we hope) into the real world. This is a powerful force upon us, even now I am drawn to stop working and play a game, there is a certain escapism to playing in any way, organized or original.

This brings me onto the second characteristic of play that Huizinga offers which is closely tied to the first: “Namely, that play is not ‘ordinary’ or ‘real’’ life. It is rather a

stepping out of real life into a temporary sphere of activity with a disposition all of its own." (Huizinga, 1938, p. 8). I have discussed this notion about poetry throughout my exploration and Huizinga actually came to see all poetry as play. I will return to this point. For now, it is worth noting that the incorporation of interactive autonomous play in the poetical medium of video games makes this comparison between poetry and play even more valid.

This is the main reason why video games achieve such a level of transportation and escapism from real life, because they provide a medium for both the virtual realms of poetry and play, things that we find enticing and compelled to participate in. I will return to this later in this chapter when moving from exploring play generally to specifically focusing on interactive virtual media, or the 'video game'. However even Huizinga shared this opinion about play, as he states: "Play is distinct from 'ordinary' life both as a locality and duration" (Huizinga, 1938, pg. 9). Play is distinct from ordinary life because for both animals and humans we 'lose ourselves' in play, it is distinct because when we participate in play, we are separated from the real world, and so just as we have always entered a virtual world so to speak when we converse and use language but also when we play, and I would argue when we are transported into poetry. This is: "The third main characteristic of play… its limitedness. It is played out within certain limits of time and place." (Huizinga, 1938, p. 9). This quote is just as valid for interactive virtual realities, they are played out within their own limits of time and place.

The final characteristic of play Huizinga offers is a result of all the other three characteristics, in that such play creates order: "Into an imperfect world and into the confusion of life it brings a temporary, a limited, perfection. Play demands order absolute and supreme. The last deviation from it 'spoils the game', robs it of its characteristics and makes it worthless. (Huizinga, 1938, p. 9).

I have shown in Chapter 2 that humans need imagined orders to be able to build a social framework and connect with each other, and so such orders are fundamental to our behavior. It is because of such orders, that virtual worlds can be intelligently designed. Creators of these worlds have absolute supreme control of their worlds

because they control the creation of; its physics or mechanics of its world, the aesthetics or looks of the world and even the dynamics of whatever forms of play they want to create and I will return to this line of inquiry.

Callois continued Huizinga's work and he believed that we can understand why we play 'games' by referring to four forms of play, these are essentially four different motivations for why we play any specific game. These forms are those of: "Competitions, chance, simulation, or vertigo is dominant. I call these Agon, Alea, Mimicry, and Ilinx, respectively. All four belong to the domain of play." (Callois, 1961, p. 12).

The first, 'Agon', (or agony) is the challenge or competition of a game. The second, 'Alea' (or chance), is the randomness of a game. The third, 'Mimicry', is Aristotle's concept of the mimesis (nature of poetry) present in a game, that incidentally also belongs in any form of poetry. Callois suggested that: "All play presupposes the temporary acceptance, if not an illusion, then at least of a closed, conventional, and, in certain respects, imaginary universe." (Callois, 1961, p. 19).

This is similar to how Aristotle outlined the main ability of poetry, in its capacity not only to represent things that are or where the case but also: "Things that are said or thought to be the case and things that ought to be the case." (Aristotle, Poetics, P, p. 50).

Finally, 'Ilinx' (Greek for whirlpool), is the final feature of some forms of play, which is to alter perceptions (like going on a rollercoaster, or spinning around). This reflects previous discussions of Huizinga in his argument that play is instinctive in that it is part of human nature. You don't have to teach a child that spinning around is fun, they will just learn it themselves. (Huizinga, 1938) (Callois, 1961)

3: 1: 1 Poetry as Play

Huizinga and Callois both approached poetry as a form of play, Huizinga states that: "Poeisis, in fact, is a play function. It proceeds within the playground of the mind, in a

world of its own which the mind creates for it." (Huizinga, 1938, p. 119). In fact, Huizinga traced this concept of poetry as play all the way back to the birth of poetry in that its origins were dependent on play, as: "Poetry in its original culture-making capacity, is born in and as play." (Huizinga, 1938, p. 122). He believed that "The creative function we call poetry is rooted in a function even more primordial than culture itself, namely play… To call poetry as Paul Valery has done, 'a playing with words and language', is no metaphor, it is the precise and literal truth." (Huizinga, 1938, p. 132).

Huizinga probably made this comparison because of the fact that he believed all examples of poetry and play are activities which proceed: "Within certain limits of time and space, in a visible order, according to rules freely accepted, and outside the sphere of necessity or material utility. The play-mood is one of rapture and enthusiasm, and is sacred or festive in accordance with the occasion. A feeling of exaltation and tension accompanies the action, mirth and relaxation follow." (Huizinga, 1938, p. 132). Whereas Callois simply believes that one of the four forms of play is in fact mimicry, the enjoyment of experiencing mimesis, and it is there that the connection between poetry and play lie.? I will now examine the medium of the video game before going onto the final part of this chapter, the exploration of the paradox of fiction, the concept of transportation and the possible mind change that can be induced from interactive virtual media (and even traditional poetry to a certain extent). This will lead us to attempt to explain the possible applications such an understanding could bring, and already in some cases are already bringing.

3: 2 The Video Game

The Video game is a comparatively young medium of poetry (and play), and a lot has already been suggested about the nature of this medium. I would like to examine the medium specifically; providing a history of its development, offer an explanation of what exactly goes into the development of video games (namely explaining the three part definition of Mechanics, Dynamics and Aesthetics), explore notions about the

different genres and platforms that video games can belong to, moving on in my exploration to discuss the effects of said medium, and the process in which they achieve said effects or mind change (transportation and the paradox of fiction). I will explore key phenomena and concepts attributed to Virtual Reality.

It should be said here that for all I say of interactive virtual media potential to provide a safe and engineered environment of the practice of virtue, much of the same can be about role playing games played that don't require the use of said media, such as the infamous Dungeons and Dragons. What I would say is that interactive virtual media doesn't require its player to imagine most of what they are experiencing, it creates said experiences and transports the player into the virtual world. Role playing requires a great deal of imagination while one suspends disbelief and gets immersed in the game. I believe that taking someone on a journey would provide an even greater vehicle for the practice of virtue than in a journey that one takes themselves on in the imagination.

In the 20th century it became clear that to some that: "A new concept of narrative was emerging, taking shape as the design of an immersive simulation to be experienced by the interactor in a video game." (Gomes, 2007, p. 55). These immersive simulations represent the world aesthetically just as traditional poetry did however, through the incorporation of literal autonomous play became akin to simulation, (something that will become vital to the Eudemian ethics of interactive virtual media that I will discuss further).

They achieve these simulations by providing possible interactions for the player (they give us a controller, to control the narratives direction through poetic worlds). In fact, for many, these worlds represent a lot more than just the autonomous action they can now perform in the video games. Wolf suggests this is the case as: "Playing the game means participating in the story, fighting for a cause, searching for an answer, beating a foe, and so on, rather than just the honing of an eye-hand co-ordination the solving of a puzzle." (Wolf, 2001, p. 101). They allow us to create our own stories and this is a key difference between traditional poetry and interactive virtual media.

As previously alluded to, in all traditional poetry we are given the story, we experience narrative and goals being attained or failed without actually being involved. But this doesn't mean they don't teach us anything. The viewer never truly experiences the narrative in a passive way. The viewer can think 'if I were that character, I would decide to do... 'and so the viewer can use these lessons learned from poetry in their own life. This is the idea of narrative as a form of vicarious learning. (Barkow, Tooby and Cosmides, 1992)

An example of this distinction is highlighted in video games such as *the Legend of Zelda* series (Miyamoto, 1986, NINTENDO), or those of *Souls* series (Miyazaki, 2009, FROMSOFTWARE). In both, there is little dialogue, the main protagonists don't even speak. The poetry is told at the pace of the player and through their own experiences of the challenges they must overcome to complete the game. In this way, the main protagonists of these series are empty vessels for us to inhabit, offering us an avatar to explore a work of fiction by ourselves or with real friends. This notion of avatar driven stories is emphasised even more so in massive multiplayer online games, such as *World of Warcraft (1994, Chilton, Kaplan and Pardo)*, or *Destiny (*2014, Jones, Pfeiffer, Tsai, Bakken and Smith, BUNGIE) the most expensive video game ever made*,* where players inhabit worlds with millions of others, creating bonds, stories and experiences that are not designed by any creator. These virtual realities provide spaces separate from objective reality in which we can lead completely separate lives.

This is only the beginning of an exploration into the medium of video games, and it is apparent to me that to be able to discuss interactive media I must attempt to provide a foundation of knowledge about the medium of the video game. I will do this by first providing a short history of the mediums progressions and then explore the different genres that have developed around the medium. I hope said sections will provide context to this exploration.

3: 2: 1 Video games – A short history

Video games weren't always so advanced and capable of such simulated shared realities. The first video games where developed on post-war mainframes designed for code breaking and calculating the trajectories of ballistics. Some of the first

examples being *Tennis for Two* (1958, Higinbotham) a basic tennis simulation and *Space war* (1962, Russel) a top down science-fiction based shooter. These games where simple on mechanical and aesthetical fronts. But this was mainly due to the hardware restrictions of the time, and these games where the first steps of a journey that led to the interactive virtual realities of today.

In the 1970's the commercial application of interactive media started to be realised with the creation of arcade games, that provided short bursts of video games through mass produced self-contained units for small amounts of money at local venues, the most notorious example from this early era being *Pong* (1972, ATARI), often deemed the first commercially successful videogame. As the hardware became more powerful, more possibilities became open to the creators of videogames. It has been argued that *Maze war* (1974, Colley and Thompson) is one of, if not the first, first-person shooter.

Classics such as *Space Invaders* (1978, TAITO) and *Donkey Kong* (1981, NINTENDO) birthed a golden age of arcade games. As hardware progressed further, home-consoles started to be sold on the mass market. This era produced the infamous *Super Mario bros* (1985, NINTENDO) a hugely influential side scrolling platformer, which came alongside the American release of the Nintendo Entertainment System. The game went on to set records for sales unmatched for decades. The golden age of the arcade had ended, yet home consoles allowed fully fledged stories to become possible. No longer was one restricted by the short bursts of games that the arcade era provided, and at home one could go on adventures that spanned hours, days, even months. An example of such a game is the original *Legend of Zelda* (Miyamoto, 1986, NINTENDO) which introduced millions to the fantasy land of Hyrule. A world of both action and adventure (I will return to this genre later), that players have explored in a series of games for over 30 years, and still do today with the release of The *Legend of Zelda Breath of the Wild* (2017, Miyamoto, Aonuma, NINTENDO).

At the end of the 1980's NINTENDO released the first Gameboy, the most successful handheld console of all time, this showed the culmination of the progress that had been made since the post-war mainframes where video games had begun. Interactive

virtual media had become a household thing, and thus games could be played on the go wherever you go and whenever you want. Because of this, if we want to apply Eudemian ethics to the use of interactive virtual media, we will be able to offer habituation to you wherever you are.

In the 1990's 16-bit home consoles pushed graphics further than ever before and adventure games benefited from enhanced visuals, this led to the creation of point and click adventure games such as *The Secret of Monkey Island (*1990, LUCASFILM) on PC. A videogame that allows one to 'become a mighty pirate' (along with your zany protagonist/avatar Guybrush Threepwood) in a way that no traditional poetry ever could. in this genre of game. You can even control your character's dialogue. This signified the birth of so called dialogue trees in video games that allowed us not only to experience the worlds autonomously but to interact with non-playable characters by saying what we wanted, behaving how we wanted and creating social simulations.

Solving puzzles provides the same type of addictive reinforcement effect in the player, and also provides the key element of 'goal attainment' feedback which operates the improvement cycle in supervised learning. A successful response also teaches the player the underlying pattern of thought that the games author had in its creation.

Platformers (games where the primary objective is to get over obstacles and through levels by jumping or climbing platforms) such as *Sonic the hedgehog* (1991 SONIC TEAM) benefited from enhanced graphics allowing one to race through colourful environments, increasing the enjoyment players could receive from the representations they are simulating. Fighting games such as *Street Fighter 2* (1991, CAPCOM) featured graphics and smooth combo based mechanics that sent the 2d fighting genre on a road of worldwide popularity. Today fighting games represent a massive portion of electronic-sports (professional sport of specific competitive games).

Some games began to allow the player to become the 'god' of a world such as *Civilisation* (1991, MICROSCOPE) where you control the development of mankind of millennia beginning the strategy genre.

Wolfenstein 3d (1992, ID) and *Doom* (1993, ID) featured high action visceral first-person gameplay and show the progress made since *Maze war*. However, the medium was still in infancy, the true revolution of the medium in my opinion came with the Nintendo 64 home console and with it *Super Mario 64 (1996, Miyamoto, NINTENDO)* a videogame that feature a three-dimensional world that one could now explore while controlling the camera of the game, this was the true realisation of the possibilities of transportation that interactive virtual media is capable of. No longer is the consumer of poetry's point of view of predetermined, now we can look where we want and at whatever we want, while going wherever we want.

Videogames on handheld consoled similarly started to allow complete autonomous open world adventure in virtual, fictional worlds such as the world presented in *Pokemon Red and Blue* (1996, GAMEFREAK).

The next notable videogame is the first-person shooter *Goldeneye* (1997, RARE), arguably the first economically successful of its kind. *Goldeneye* is interesting to me as it is a film adaption, why would someone want to play the game *Goldeneye* instead of watching the film? I believe that it is because it's undeniably more immersive, becoming James Bond, in my opinion, beats watching James Bond any day.

The fact is that video games have become just as, if not more desirable than traditional forms of poetry. The most notable game to show this from this era is *the Legend of Zelda Ocarina of Time* (1998, NINTENDO). One of the highest rated videogames of all time, this infamous journey is perhaps one of the first examples of poetry that can only be realised by playing it. The game develops upon the 3d environment and camera autonomy of *Super Mario 64* yet involves articulate refinement of its story telling devices. The world is a seamlessly connected one that isn't separated by loading screens, and one can experience the whole game without breaking immersion. Such a world has only been replicated a few times, most notably in *Dark souls* (2011, Miyazaki, FROMSOFTWARE).

Home consoles became a global industry and today multiple companies compete against each other to provide platforms of interactive virtual media, continually pushing their hardware. In such a competitive environment, video games have

evolved and developed at an exponential rate. Today we have open world games such as the previously mentioned virtual online nations in *World of Warcraft* and futuristic dystopian solar systems such in *Destiny*.

Then the development of motion based controls primarily utilised in the Wii, a home console promoted another step in the mediums evolution. Video games could now utilise motion control, using our actions and movements instead of controller based (thumb and button) types of gameplay. Now one's own actions can literally be their controls, making gameplay ever more immersive. This technology has culminated in games such as Arms (2017, Sato, NINTENDO) on Nintendo's most recent console. the Nintendo switch), a physically draining fighting game, where players actually throw punches to control their characters fighting style, showing the difference hardware can have compared to previous iterations of the fighting genre, for example the combo-based fighting games such *Streetfighter 2* and the notoriously violent and gory *Mortal Kombat* (1992, MIDWAY GAMES).

The Nintendo switch console marks an interesting development, in that it is a home-console, and portable hybrid. It features games such as *The Legend of Zelda Breath of The Wild* (2017, NINTENDO) and *Super Mario Odyssey (2017, NINTENDO)* which are games that surpass previous home console games, yet the console can easily be picked up and taken 'on the go'. This hybrid development allows interactive virtual media to become the perfect habituation machines as they can be played whenever you desire, or whenever you are notified, leading to repetitive learning being accessible on a 24/7 basis. Additionally, as previously described, due to the fact that we are playing while consuming our poetry, we find the cognition effortless, yet we are still achieving goal driven activity and in turn developing skills.

We are on the precipice of the next step for the medium. Virtual reality is a technology (only recently refined), that straps interactive virtual media to the players face, completely taking control of their perception. This technology uses motion based movements of our head to control the direction of perspective, and in doing so creates the illusion that we have literally been transported into virtual realities. Gone is the need for the suspension of disbelief. This hardware is the next step in

interactive virtual media because it provides the perfect vehicle for transportation, which I will explore further on in this chapter. What implications can we derive from the creation of this technology? I have previously explored how our memory, declarative or implicit not only allows us to learn from everything that has happened to us but also continuously motivates our judgement in the future. Memories gained from interactive virtual media, especially from ones of virtual reality, are in my opinion just as capable of imprinting both types of memory in us.

3: 2: 2 'Virtual Reality' (the technology), Cyberspace and Augmented Reality.

One of the first references to the more modern concept of virtual reality came from a short science- fiction story, *Pygmalion's Spectacles* (Weinbaum, 1935). In it Weinbaum described a virtual reality similar to the modern systems of today. However, his also included the sensations of smell and touch, empirical senses that will surely come to virtual reality. Nintendo's controllers are already not only capable of motion control but also of simulating touch to a certain extent by something they call 'HD RUMBLE', this feature uses vibration to simulate touch, combined with motion control this allow the controllers to react to our movements and alter the simulated touch to correspond with the virtual reality. For example, I can pick up a treasure chest in a game, and by physically shaking my hands, feel the vibrations of what is inside. Such advancements in technology allows new possible ways one can experience transportation in interactive virtual media.

A "cyberspace" is a network of Virtual Realities. Ryan explored this new frontier of networked Virtual Realities. Virtual reality is described by Ryan as: "A computer-generated three – dimensional, landscape, in which we would experience an expansion of our physical and sensory powers; leave our bodies and see ourselves from the outsider; adopt new identities; apprehend immaterial objects through many senses, including touch." (Ryan, 2001, p. 1). With the realisation of such technology, questions arise as to the impact that the technology can have on its users. 'Augmented Reality' is a technology that superimposes a computer-generated image onto the user's view, this may sound just like Virtual Reality but Augmented Reality

actually superimposes poetry into our real world (through devices such as the holo-lenses), thus providing an antithesis of Virtual reality technology, fully realising Lemarque's notion of bringing pretend worlds into our worlds. *(Lemarque, 2009)*

Could we use this technology to make our lives better? In a similar post-human endeavour (to enhance or reclaim the abilities and capacities of human beings via technology) to use technology for practical applications (importantly the practice of eudemonia), by augmenting the real world, instead of creating virtual ones. Augmented reality has helped us to gamify our real lives, in the sense that if we can intelligently design virtual realities for practical applications then with the advent of Augmented Reality, we could we augment our own reality to do the same (this sounds a lot healthier than being stuck inside virtual realities all the time). For example, Pokemon Go (2016, NIANTIC) realised this endeavour on a global scale. A game that brought the world of *Pokemon Red and Blue* into our world. This game featured GPS tracking and rewarded walking long distances, and visiting local landmarks to gain experience and catch virtual monsters. The game went viral and for months one would see groups of people huddled around mostly insignificant locations all staring down at their phone. This video game proved that the power and potential of Augmented Reality is undeniable.

I have offered just a brief and selective history of the development of the video game medium and I have touched upon different genre, I will return to this soon. Yet first I believe we must explore what goes into the creation of said games in the first place, to do so we can turn to the mechanics, dynamics and aesthetics tri-partite construction model.

3: 2: 3 The Mechanics Dynamics Aesthetics model

Hunicke, LeBlanc, and Zubek offered an outline for the construction of any video game. Firstly, they discuss the first pillar of any video game, its Mechanics. The term Mechanics describes: "The particular components of the videogame, at the level of data representation and algorithms." (Hunicke, LeBlanc, & Zubek, 2004, p. 3).

Secondly, they identify the physics and laws of nature that are necessary to build the Dynamics of a video game. These Dynamics are: "The run-time behaviour of the mechanics acting on player inputs and each other's outputs over time." (Hunicke, LeBlanc, & Zubek, 2004, p. 3), the actual gameplay experience that the player will be given while exploring the video game. Finally, Aesthetics is the form to achieve (hopefully) the core aesthetic of the video game: "The desirable emotional responses evoked in the player, when she interacts with the game system." (Hunicke, LeBlanc, & Zubek, 2004, p. 3).

The trio believed that Mechanics and Dynamics create the Aesthetics of a game, not only referring to its beauty and look, but also the essential reason behind one's motivation to play a game, say to go on an adventure, or to prove one's superior skill over others. One can refer back to Callois' different forms of play to examine these Aesthetics but in the MDA modal we can derive that: "From the designer's perspective, the mechanics give rise to dynamic system behaviour, which in turn leads to particular aesthetic experiences…From the player's perspective, aesthetics set the tone, which is born out in observable dynamics and eventually, operable mechanics." (Hunicke, LeBlanc, & Zubek, 2004, p. 3).

Every developer of a game must provide these three pillars in order to create interactive virtual media. Once this is done a virtual reality is born and the level of transportation into these worlds achieved depends on how well a developer can construct said mechanics, dynamics and aesthetics of a game intelligently.

3: 2: 4 Video game Genre

A video game genre is a specific category of games, identified by looking at the characteristics of an individual game, instead of the actual content of the game or its medium/platform. I will examine three separate types of video game.

Action games

This genre features physical challenges that require eye-hand coordination and motor skill to overcome. This genre can be split into many sub genres that I will briefly explore.

Platform games where players jump over obstacles and over gaps between platforms**.** Whereas Shooter games use ranged projectiles that the player can aim. Shooters, are often also classified by their perspective. First-person shooters (FPS) are played within the protagonist's perspective whereas in third-person shooters (TPS), the protagonist's body can be seen fully however there are advantages and disadvantages to both and some action games utlilise both perspectives. Fighting games simulate close-range combat. Stealth games emphasise sneaking and critical attacks instead of the mayhem offered by various types of shooters, and Survival games start the player off with minimal resources, in a hostile, open-world environment and require the player to be efficient and cautious in order to develop resources and stay alive for as long as possible.

Today, many titles from the action genre involve violent gameplay and this has alerted people to the possible dangers of allowing impressionable young children to play such games. This testifies to the research I am currently undertaking. These parents are obviously concerned about what their children will learn from such violent simulations. If they believe damage can be done, the opposite can also be true, and by the end of this exploration I will have shown it. How can we design interactive media for beneficial practice and education purposes? And in an Aristotelian sense, this would mean we could create moral simulations, in an intelligent way to evoke the learning of virtues, and the gaining of eudemonia, I will return to this point.

Adventure games

This genre features some of the earliest video games created and is the second main genre that I will explore. Adventure describes a manner of gameplay without reflex

challenges or action. They normally require the player to solve various puzzles by interacting with people or the environment. Such as the previously mentioned *Secret of Monkey Island*. Similarly, the subgenre of Role-playing video games cast the player in the role of one or more 'adventurers' that progress together through a storyline and is a sub-genre of Adventure games, seen in games such as *Undertale* (2015, Fox) and *Journey* (2012, THATGAMECOMPANY).

Many other genres have emerged as a hybrid of both action, adventure and simulation genre. For example, the action-adventure genre incorporates both action and adventure such as the aforementioned *Legend of Zelda* series, which involves puzzles, combat, and RPG elements for the player to navigate, experience and solve.

The adventure game in my opinion perfectly represents the possibilities of video games over traditional media, now instead of viewing or imagining a composite monomyth of an archetypal hero's journey (Cambell, 1949), we experience said journey ourselves, leaving our ordinary world and entering a strange reality, filled with treasure, danger, purpose and excitement, creating a player's journey.

MMORPG's feature hundreds of players interacting with each other in real-time. These virtual realities are capable of supporting large numbers of players simultaneously, connected through the internet. The 'massively multiplayer' concept was quickly combined with other genres such as *Destiny*, a game that has often been heralded as an MMORPG – FPS (a 'Massively Multiplayer Online Role-Playing Game - First Person Shooter) the latest of the action-adventure hybrid genre MMO games allow players to create bonds and friendships with people around the world.

Kuss and Griffiths conclude that given the endless possibilities of MMORPG's social nature and the possibility for the gamer to develop an attachment to their avatar, they argue that because of these two features this genre is the most addictive type of video game. (Kuss, Griffiths, 2012). These games are designed to 'pull the player in', to ensure that each level is rewarded, and that play never stops.

Simulation/Strategy games

This is a diverse genre, generally defined as any game that attempts to simulate aspects of a real or fictional reality. These include job simulation, world simulation and vehicle simulation games. In addition, there are the sport simulation sub genres, such as the sports games that simulate traditional physical sports and Racing games. These games have been around since the early games such as *Pong*, and yet are still some of the most popular games of today, take the *Fifa* series (ELECTRONIC ARTS) for example.

We can see this practicing of skill in the genre of Strategy video games. Strategy games require advanced judgement making, by simulating complicated scenarios such as cards based games and top down godlike control of whole armies (an emperor, general or omnipotent view). In these games players are often made to analyse the data at hand and make judgements under time pressure.

What more could Aristotle have asked for, we now have virtual playgrounds that allow us (through the doctrine of the mean) to refine our judgement making skills. I believe that it is in this virtual playground that we have the chance of practicing the virtues, without the actual repercussions of moral actions in real life. We can simulate these moral predicaments in place of using real life problems which are not readily and repetitively available.

I hope I have at least provided sufficient context to the video game medium to now move onto the third part of this chapter applying Aristotelian philosophy to the practical science of the applications of interactive virtual media, namely the effects of transportation on the player (in that transportation helps said media offer the accumulation of implicit memory learning).

3: 3 A Practical Science, Applications of Transportation

In an Aristotelian sense, this whole exploration has been one of a practical science. We hope to achieve practical applications by understanding virtual realities, specifically the extent of the technology's ability to induce transportation via the poetry it presents. In this final part of my exploration it is my intention to explore the possible applications of interactive virtual media beginning this chapter by exploring the paradox of fiction and transportation, and then the concept of 'mind change' that can occur from said transportation. I will conclude with possible applications of the technology and finally, in an Aristotelian approach to the effects of transportation of the player of interactive virtual media, provide a practical ethical application.

As previously hinted at there is a paradox involved in the process of the effects of all poetry, in that we know that fictional events are merely representations and are not real, yet we gain real emotions from the consuming of said representations.

3: 3: 1 The Paradox of fiction

The paradox of fiction can be seen as two distinct paradoxes in fact, the first type, described by Levinson is known as the possibility paradox of fiction, it holds that there is a paradox in the collection of these three principles;

1 We have actual emotional responses to poetry.

2 We do not believe that the poetry is real-life.

3 We are only genuinely moved by things we believe exist.

This paradox focuses on the fact that because we must accept principle 1 we must reject 2 or 3. We have emotional responses to poetry, this is clear, but how can this be if we know it is fake? I believe to answer this the third principle is simply a

common misconception, as previously discussed throughout this paper we are genuinely moved by thing we know don't actually exist, say imagined orders, origin myths and poetry, therefore with regards to the possibility paradox of fiction I reject principle 3 and therefore principles 1 and 2 are coherent and there is no paradox. (Levinson, 1990)

Another version of the paradox of fiction, discussed by Radford (1975), focused specifically on the rationality of emotional responses to fiction, and so I will call it the rationality paradox of fiction. He argued emotions gained from poetry must be irrational because of the incompatibility of the following three principles

1 Our emotional responses to poetry are rational and serve a purpose.

2 We do not believe that poetry is real-life.

3 Emotional responses are rational only when drawn from something we believe exists.

If we accept 2 or 3 we must deny 1, that our emotional responses to poetry are irrational and just 'pretend' emotional responses (almost the playing with emotional response) akin to Huizinga's concept of Poetry as Play, this was also Walton's conclusion to this paradox of fiction. (Walton ,1990)

However, it has been argued that this account of Poetry as Play fails to explain why we sometimes become so immersed in fiction that we cannot stop ourselves from experiencing emotional responses. This is only exemplified more so in video games, as previously discussed we become transported into poetry and virtual realities by either suspending our disbelief to engage in the consumption of traditional poetry, or by being metaphorically 'captured' by enticing modern poetry, we do actually believe poetry is real-life, even if just for a moment.

This is how Hurka responded to the rationality paradox by denying 2. In which case, we can still believe our emotional responses to poetry are rational and can serve a purpose (ones that I will discuss later), and also that emotional responses are rational only when drawn from something we believe exists. For the time being, in moments

of transportation, consumers of poetry (and especially players of video games) actually believe what appears to be happening, is happening. (Hurka, 2001).

Therefore, I agree with Hurka in that we cannot deny that we have emotional responses to poetry, even though in our declarative selves, we know that poetry isn't real (because our implicit memory reacts as if it is so) as discussed throughout this exploration. To summarise we don't have to believe that poetry exists for it to affect us because our implicit selves do believe it exists. Therefore, with regards to the rationality paradox of fiction I conclude that premise 2 is incorrect, in a way, in that we don't have to declaratively believe poetry exists for it to affect us because implicitly we do. I believe that our emotional responses serve a purpose (to train our implicit memory at its tasks) and that emotional responses are still only rational when drawn from something that we exist (at least our implicit memory).

Lamarque argued that we do not enter pretend worlds, but rather, we let the pretend worlds enter our world. (Lamarque, 1981). I propose this is a more accurate depiction for traditional poetry instead of virtual realities? As in a way, we can now actually enter virtual worlds.

3: 3: 2 Transportation as a result of our implicit cognition

A lot has been said already about the transportation that occurs when we engage in all poetry (especially Virtual Reality technology and other simulations of interactive virtual media) yet I have not fully explored the notion yet, de Cruz and de Smedt stated that this transportation is a metaphor for the feeling of immersion we get from poetry and games, it was first used by Gerrig in 1993**.** (Gerrig, 1993) (de Cruz and de Smedt, 2017)

The metaphor has since been used by countless scholars to describe the immersive consumption of poetry (Gerrig, 1993). Neuroimaging studies have discovered a neural network in the brain that is engaged when we are recalling memories, predicting the future, high orders of intentionality, and our ability to remember direction and location (Buckner & Carroll 2007). Buckner later discovered that this same network is

also active when we are in a resting state, he called this state the default mode network or DMN (Buckner, 2008). I have previously described this as an automatic lower effort/attentive mode, driven primarily by implicit thinking or memory.

Both de Cruz and de Smedt believe that it could be that the ability of transportation in fact primarily involves this 'DMN'. This is what Tamir found after looking specifically at the brain while engaged in transportation into fictional environments. This research concluded that more vivid descriptions led to increased activation in the DMN compared to basic ones, and also that narratives that described social interactions resulted in increased activity in brain areas that are part of the DMN. (Tamir, 2016). It could then be concluded that being transported into a story is a result of an increased engagement of the DMN. We, our declarative selves, know that we are participating in the consumption of poetry yet, the DMN is not aware of this, and is instead playing the poetry out due to its automatic, predictive processes. We can then deny the second principle of the paradox of fiction, and hold that we actually believe fictional events are real (by relying on the gullibility of implicit memories processes in the mind). (de Cruz and de Smedt, 2017)

3: 3: 3 The Danger of Mind change – Traversing the Digital Wildfire

Virtual reality technology faces a number of challenges, including health and safety, privacy and technical issues. Long-term effects of virtual reality on neurological development are unknown. But I'm not arguing that if technology effects the brain it shouldn't be used, instead I believe the opposite, of course we should use it for good purposes like achieving Eudemonia by practising virtuous behaviour, this has always been about effecting the brain in such a way. Baroness Susan Greenfield, a leading neuroscientist has been pioneer of the term 'Mind Change' (derived from the term 'Climate change'). Greenfield first came to the forefront of the discussion of the ever-evolving effects of digital technologies when she gave a speech at the House of Lords in 2009 on the matter from the perspective of a neuroscientist. In this speech, she proposed that firstly, the human brain adapts to different environments, and secondly its environments are changing in unprecedented ways, therefore she

concluded that the brain may also be 'changing' in an unprecedented way. (Greenfield, 2014 pg. 1).

Greenfield believes that very little is being done by the UK government to promote the possible effects of 'screen culture'. She believed that if digital technology has said effects on the brain, then the prolonged use of it is not sensible (Greenfield, 2014, pg. 1). This is relevant to my own exploration, if digital technology is indeed already causing possibly 'negative' mind change, then this testifies to the importance of; firstly, understanding the possible effects of the use of digital technology (especially Virtual realities of full transportation); secondly understanding how positive uses can instead be gain from the technology; and thirdly how to minimize any negative (vicious) effects on our brain. I therefore propose that prolonged use could be sensible if the interactive virtual media is understood and designed right.

Greenfield explored the different ways in which digital technologies could affect not just thinking patterns and other cognitive skills, but also our lifestyle and culture. (Greenfield, 2014, pg. 34)

Greenfield believes this to be a vitally important issue, because: "It may be that a daily existence revolving around the smartphone, iPad, laptop and Xbox is radically changing not just our everyday lifestyles, but also our identities and even our inner thoughts, in unprecedented ways." (Greenfield, 2014 pg. 1). Therefore, Greenfield wants to explore how the brain may now be reacting to this new environment that she calls the 'digital wildfire' (Greenfield, 2014)

Most people believe they have enough common sense to ensure things won't get out of hand, that they are capable of controlling how much time they spend on interactive virtual media, and whether or not their children become completely obsessed by it. But Greenfield doesn't believe this is the case: "When has 'common sense' ever automatically prevailed over easy, profitable or enjoyable possibilities?" (Greenfield, 2014, pg. 2). What unknown problems could arise from the unguided abuse of the digital wildfire, that is everyday life for many? Greenfield wants us to embrace this time as an opportunity to: "Examine and take stock of where we are and

where we wish to go, and to work out how to get there in terms of what we want the twenty-first-century lifestyle and society to look like." (Greenfield, 2014, pg. 34)

Because Greenfield is a cognitive scientist she approaches this topic from a certain perspective, she holds that: "If you place a human brain, with its evolutionary mandate to adapt to its environment, in an environment where there is no obvious linear sequence where facts can be accessed at random, where everything is reversible, where the gap between stimulus and response is minimal, and above all where time is short, then your train of thought could be derailed." (Greenfield, 2014, pg. 12). This certainly isn't what a Eudemian exploration would advocate, we must therefore endeavor to create (through intelligently designed interactive virtual media), such environments could be created in the future in the pursuit of Eudemian purposes. Understanding Greenfield's warnings of the possible dangers that such technology has had, and could have, is important if we hope to understand how to create positive applications of virtual realities, and to avoid vicious disposition being gained.

In summary, the underlying argument of Greenfield's *Mind Change* is that we adapt to the different environments that we find ourselves in, and the digital wildfire seems to be an unprecedented new environment that many of us find ourselves in on a day to day basis, so we can assume that we are adapting in corresponding new ways. And I share this sentiment with regards to my own exploration. (Greenfield, 2014)

3: 3: 4 Square eyes and Cyber-world-problems

Greenfield goes onto explore the video game medium (distinct in its entertainment and poetic motivations and origins). She believes that, on the one hand, there are clear positives, for example, improved sensorimotor coordination and perceptual and implicit learning (if the right thing is learnt). On the other hand, there are clear problems associated with its use (mainly of addiction and abuse).

In video games, I have previously explained how we are transported masterfully into a visually rich world where we assume a character or avatar in whatever actions we

desire. They allow us to, in Greenfields words, “Navigate these fictional beings through situations involving moral choices, violence/aggression and role-playing, with intricate reward systems built into the games that provide incentive to carry on living out the fantasy. Some individuals can become so immersed that they lose track of the real world and time; they report that they turn into their avatars when they load the game, and become their characters. Alternatively, gamers may develop an emotional attachment to their character”. (Greenfield, 2014, pg. 42). I see know issue with this, and nor am I surprised, given our explorations of how our implicit selves actually believe that our virtual experiences are real ones.

Virtual realities are capable of offering all of this, they will provide the perfect vehicle for transportation and the gaining of improved and virtuous implicit memory. I will now continue to conclude this chapter with my opinion of whether or not we can use these effects to specifically achieve Eudemian practical applications, as per the Aristotelian nature of my exploration. Bavelier said that “In technology, we have a set of tools that has the capability to drastically modify human behaviour, inevitably modifying the brain.” (Bavelier, 2012) I believe Virtual Realities to be the best form of technology for attaining this.

3: 3: 5 The benefits and effects of ‘gaming’

One fascinating revelation from cognitive science is that a recent investigation using brain imaging of habitual gamers found an enlargement of one specific area of the brain, a growth usually seen in compulsive gamblers and in fact in both activities: “A substance (dopamine) is released from this particular brain region (the nucleus accumbens) that is a key chemical messenger enhanced by all addictive psycho-active drugs.” (Greenfield, 2014, pg. 43). Can we really use such a technology to help us learn virtue? I believe so, Aristotle said of such pleasure that: “It is generally agreed that pleasure is very closely bound by human nature; which is why those educating the young keep them straight with pleasure and pain. It is also thought to be most important for forming of a virtuous character to like and dislike the right things…. Since people choose what is pleasant and avoid pain…One school maintains that

pleasure is the good; another, on the contrary, that it is wholly bad." (Aristotle, The Nicomachean Ethics, pg. 254). Pleasure clearly motivates us from an early age and in most pursuits, and I believe it would be a great thing to be able to instigate pleasure while learning, in an attempt to achieve 'Flow' in the student, or player.

I would also like to point out that video games offer more than just pleasure. I believe they provide an escape from purposeless, directionless 'real life'. Greenfield explored the reasons we play Massive Multiplayer Online Role-Play-Games to explain this phenomenon. She found that although said games always have intricate reward systems, it is in fact: "The social interaction that appears to be the real extra hook. Perhaps the appeal is that the player is now not just playing a game, but playing out an idealized life that is simultaneously exciting and safe, both physically and mentally." (Greenfield, 2014, pg. 172). This phenomenon shows how interactive virtual media could offer the perfect arena to practice our skills and behaviour, to prepare our declarative and implicit selves for future moments of judgment (moral or otherwise) by being incredibly more efficient, effective and practical way of offering such an arena of practice than anything in the real world could offer.

I will now ask how the repetitive use of transportation (for purposes other than strictly Eudemian) affect us in a cognitive sense? In a similar sense to my previous exploration of the science of cognition, Greenfield believes that identity is not just about being able to make sense of the world, but also involves our implicit selves and their intuitive and automatic (implicit) reactions to the world. This is the main cognitive process that dictates how you interact with your environments, in a specific context at a specific time. Greenfield stated that gamers become: "Extremely emotionally dependent on their avatars, their guild, their team as someone in the real world may be attached to their real-world relationships or objects. In these instances, the momentary context has shifted online into an artificial world." (Greenfield, 2014, pg. 173)

The benefits of inhabiting these worlds lies not just in their escapism or their poetic value, but also the benefits of improving how gamers will be able to learn, and these new-found talents of course have real-world application. Greenfield states that these

include: “A superior ability to see small details, faster processing of rapidly presented information, higher capacity in short-term memory, increased capacity to process multiple objects simultaneously and flexible switching between tasks – all useful skills in a variety of precision-demanding jobs.” (Greenfield, 2014, pg. 180)

Therefore, not only are video games offering rehearsal of specific skills but, also ones that can be generalised to other situations. All the while being engaging, exciting and easy to participate in, as previously discussed playing and learning are both fun. In the collaboration of the two I believe we could initiate a ‘Flow’ like state of learning consistently, and help people learn a multitude of skills quicker and easier than any other training method.

Whilst video games might have both positive and negative effects on human enjoyment, attention spans and sensory accuracy, this misses the most important possibility. When the printing press was invented, we set in motion a process to enlighten and inform billions of people with a huge richness of knowledge. Some of this was undoubtedly bad, but overwhelmingly most would judge that overall there was more good than bad in this change. Certainly, as a result, our brains created a significant new capability driven by implicit memory, which was the ability to read. ‘Mind change’ is therefore not unprecedented, and arguably the practice of reading detracts from other activities which we could be undertaking, especially if taken to an obsessive level.

The brain is capable of great plasticity, and therefore we must take notice as to what changes we could be incurring on ourselves with the use of technology. What is immediately clear is that there is a potential for cultivating virtues and reaching Eudemonia by using this technology along with countless other practical skills. Printing revolutionised the learning of facts, procedures, plans and methods for the enhancement of our explicit (declarative) capabilities. The potential for virtual reality is that it could do the same for our implicit mental systems and memories, which affect our virtues, behavior, decision making and emotional well-being. So far, these characteristics have proved elusive for mankind to control and improve but I believe that interactive virtual media holds the key to such control and improvement.

3: 3: 6 Eudemonia through Virtual reality

Virtual Reality Exposure Therapy is a therapy for treating anxiety disorders phobias. Studies have indicated that when this application of the effects of transportation into virtual reality is combined with other forms of behavioural therapy, and as a result, patients experience a reduction of symptoms from such virtual reality exposure therapy. (Maskey, Lowry, Rodgers, McConachie and Parr, 2014)

Maskey, Lowry, Rodgers, McConachie and Parr developed a Virtual reality environment in order to create a form of Virtual Reality Exposure Therapy which can be applied to anxiety. They developed and evaluated this unique treatment, combining cognitive behavior therapy with graduated exposure in their virtual reality environment (Maskey, Lowry, Rodgers, McConachie and Parr, 2014). From their research, we can conclude that virtual realities offer a powerful tool for training as players become transported into a computer-generated 3D virtual world. Newly learned skills can be rehearsed and reinforced in a safe and controlled environment.

Indeed, in light of these revelations Virtual Realities are already being used successfully in the general population to treat fear of flying and fear of public speaking, in the medical industry to teach surgical techniques to inexperienced surgeons, the army train for war and in NASA to help astronauts train for their missions into space among many other professions. Therefore, I believe (from an Aristotelian perspective) that in the future we should attempt to create a form of Virtual Reality Eudemian Therapy, for popular consumption, for us all to practice at the profession of Virtue.

Lessons from Chapter 3

The essence of this exploration has been to apply Aristotelian philosophy to interactive virtual media, and this chapter is the culmination and arrowhead of said exploration. In this final chapter I explored the effects of transportation on the player

and the practical applications of Virtual Realities, in order to ascertain whether we could design interactive virtual media to provide a simulation of moral practice where we could develop our knowledge of virtue, ultimately helping us achieve Eudemonia. In order to do this, I examined in a poetical sense what video games are (in their incorporation of actual play).

I discovered what goes into developing video games (their Mechanics, Dynamics and Aesthetics), the different forms of play and the basic characteristics of games. I then provided context to the history, genre, and evolution of the video game medium. I have focused specifically on the nature of virtual realities created by interactive virtual media and the cyberspace, that is, the interconnected network of said virtual realities.

I then examined the paradox of fiction in two distinct forms to discover the exact nature of transportation. And concluded that transportation relies heavily on the implicit processes of cognition that I explored in Chapter 2. I have considered the dangers of so called ‘Mind Change’ and the relevance of both the beneficial and unwanted effects of interactive virtual media and other digital technologies.

Final Thoughts

Virtual reality is used to provide learners with a virtual environment where they can develop their skills without the real-world consequences of failing. The technology can induce transportation and in doing so can create implicit memories in us, there are many possible applications good or bad that this technology can have and many have been discussed in this exploration. From an Aristotelian perspective, what I find most fascinating about this this concept is that it provides the perfect environment for one to practise virtue, this will inevitably strengthen and reinforce one's virtuous patterns of behaviour in the mind as we have also shown and if intelligently designed, virtual reality can help us achieve Eudemonia. I am not proposing that anyone is going to achieve Eudemonia from just any game. Instead I believe that with a Virtual Reality we can practice virtuous dispositions. It is my sincere hope that beneficial interactive virtual media will begin to be created for general use.

I believe this exploration as a whole has provided a foundation to the creation and validity of the Eudemian practical application of virtual realities. We can do this only after examining the effects of transportation on the player, the emerging power of the technology and the prevalent criticism of digital technology and virtual reality. Only then can we create such interactive virtual media that can offer a platform for transportation into Virtual Realities where players can practise virtuous activity, gaining explicit and implicit memories akin to one gained from the real world. It is my belief that in doing so, said players will have a better chance of flourishing virtuously and in turn gaining eudemonia. After all, Implicit memories are powerful and everlasting dispositional attitudes, so a virtue such as: "Courage need not be remembered, for it is never forgotten." - The *Legend of Zelda Breath of the Wild* (2017, Miyamoto, Aonuma, NINTENDO)

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