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“A Study of the **Immersion**  
**Enhancement Techniques**  
Utilised by Video Games.”

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# 1. Introduction

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The difficulty with talking about immersion is simply the range of definitions of the word. All have similar founding principles whether it's to 'immerse one's self in water' or to 'immerse one's self in to studies'. All of the varying definitions essentially describe the sense of being encapsulated, surrounded and enclosed in either something physical such as water, or implied mental and stimulating virtualisation. Because of variations in definition it is important that I begin by stating the interpretation I wish to discuss; for the purposes of this study I shall be using Joseph Nechvatal's version of the definition:

Immersion is the state of consciousness where an immersant's awareness of physical self is diminished or lost by being surrounded in an engrossing total environment; often artificial. (Nechvatal, 1999)

Immersion is essentially the willing suspension of disbelief (Coleridge, 1817); the concept of an individual willingly accepting that what they are viewing or experiencing is plausible and real, no matter how unrealistic the experience truly is. This is evident in even the seemingly simplest of immersive experiences, such as watching a motion picture; the film is simply a series of images played in sequence to trick the mind into believing it is seeing progressive motion, although this is arguably an illusion. At the end-of-the-day "a television is a glowing image inside a box"

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(Walsh, 2009, p. 16) and “a cinema is a big moving picture in a darkened room” (p. 18). The same principle is evident in all immersive experiences (games, movies, books). Video games are built upon this theory of ‘willing suspension of disbelief’, for example in order to play Wii Tennis (Nintendo, 2006) the player must physically re-enact the action of play playing tennis as a gameplay method, the player suspends their disbelief that they are playing on a virtual tennis court with a plastic remote controller; see Fig 1. So in essence the more an individual believes or ‘buys into’ an experience the more immersed they are.



Fig 1 – Two individuals competing at a game of Wii Tennis (part of Wii Sports). (Nintendo, 2006)

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Creating elements of an experience that promote immersion are as much an art as it is a science. The 'holy grail' for immersion is VR (Virtual Reality) which integrates and projects as many physical attributes into a virtual plain in order to create a sense of 'total immersion'; this is essentially hardware enhancing an immersive state, and as-yet unachieved. Whilst immersion promoted by hardware (the science approach) is widely considered to be the way forward, perhaps art and design is currently the most immersive aspect of current video games. The quality of graphics and animated elements has long been a selling point for video games and consoles, evident in the success of games promoting high quality graphics such as Halo: Combat Evolved (Bungie, 2001) which sold over a million copies in only four months. Immersion methods can be arranged into three different categories: narrative, gameplay and hardware. It is because of this they I have decided to discuss the differences between the techniques in the following categories:

**Narrative** – How do traditional and new-media story techniques and methods promote immersion in video games?

**Gameplay** – This is the rules that an experience is constructed from. Rules provide parameters for which an experience can be built.

**Middle-Ground** – The space where both narrative and gameplay elements create an immersive experience.

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**Technology** – Technology has been making leaps-and-bounds in respects to immersion such as faster computers, surround sound, motion tracking and controller-less interfaces.

As an individual who enjoys playing video games, I collected and compiled a list of video games I have experienced within the past twelve months or-so. These have been arranged into two columns based on whether they are primarily script based (immersion by narrative) or gameplay driven (immersion through rules), or in some cases both combined to support an immersive experience. (See appendix 1). A number of these games will be discussed during the paper.

## 2. Narrative

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In Carolyn Handler Miller's book *Digital Storytelling* (Miller, 2008) everything from back-story to character development falls into the category of a narrative; by way as a 'digital story'. All video games therefore incorporate some type of narrative even if it simply aesthetic styling for a purely gameplay driven puzzle game, for example *Plants vs. Zombies* (PopCap Games, 2009) which falls into the category of 'casual game', a genre noted for its lack of narrative. The video game is in essence just a problem solving game void of character development, back-story and story progression; the game universe is restricted to a garden and only contains one character communicates with you throughout. However the garden setting, the fact that the attacking zombies are the enemy, the consequence of failure is death, the basic interaction with 'Crazy Dave' (Fig. 3), day changes to night and the letters you periodically receive from the zombies are all parts of the game narrative. Essentially a games premise is its narrative, just as the author of a book creates the parameters for their scene to unfold.

Games that are formed around a narrative are essentially games that tell a story or 'games as stories'. These types of video games immerse a player using narrative techniques typically to create a complex fictional game universe through which the story of virtual characters can be told. To some extremes, some narrative based games are merely more than stories set in virtual environments to explore; for example David Miles describes the video game *Myst* (Cyan, 1993) as not a video game but instead an 'interactive multimedia novel on CD-ROM' (Miles, 1999, p. 309).





Fig 2 – A scenario underway in Plants vs. Zombies (PopCap Games, 2009).



Fig 3 – Crazy Dave introducing himself at the start of the game. (PopCap Games, 2009)

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There are many genres of video game: first person shooter (FPS), real-time strategy (RTS), puzzle, massive multiplayer online (MMO), simulations (Sim), sports, driving, platform and a number of others. But one type of video game genre utilises narrative development more than any other: the Role Play Game (RPG) and similarly but often to a lesser extent, the Massive Multiplayer Online Role Play Game (MMORPG). These are games where the player controls a virtual representation of their self in a virtual environment where they have the freedom to 'play-out' the character as they wish, whether evil or good, a wizard or a soldier. Most of the games listed in the 'narrative based' column of the 'Game Categorisation' document (see Appendix 1) are RPG video games. Some of the most successful video games of all time have been RPGs, amongst them being the Pokémon series<sup>1</sup>, the Final Fantasy series<sup>2</sup>, Fallout 3<sup>3</sup>, the Fable series<sup>4</sup> and the Mass Effect series<sup>5</sup>.

The entire constructions of Role Play Games are dictated by strong, well-developed narrative elements all designed to immerse a player into the virtual universe.

Gameplay has never been the RPGs forte. A high attention to narrative detail is a key characteristic of this genre of game; the technique is used to promote immersion using the understanding that the deeper the universe is, the more '3-dimensional' characters are, the more relatable characters are and the more complex a story is, then the more enclosed and involved the player feels with the game. The same technique also works to create a sense of ownership and personal relation to their

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<sup>1</sup> (Game Freak, Creatures Inc., 1996)

<sup>2</sup> (Square Enix, 1987)

<sup>3</sup> (Bethesda Game Studios, 2008)

<sup>4</sup> (Lionhead Studios, 2004)

<sup>5</sup> (BioWare, 2007)

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avatar by giving the player the ability to customise their character's variables; "such as species, occupation, skill, and special talents." (Miller, 2008, p. 247) (See Fig 4.)

Tom Bissell describes his experience of encountering other players' versions of 'Shepard', the lead character of Mass Effect (BioWare, 2007) after having finished the game with his customised female avatar:

Long after I finished Mass Effect, I consulted YouTube to rewatch a few of its key scenes and was confronted by a series of rank imposters: bald Shepards, Asian Shepards, black Shepards, and (most appalling) male Shepards. [...] The YouTube Shepards struck me as imposters because that is what there were. (Bissell, 2010, p. 111)

Role Play Games have been continuously pushing the envelop of narrative immersion, building bigger worlds, deeper stories and greater freedom to explore. In recent years attention has been drawn to the player's ability to affect the virtual world based on their character's actions. This trend arguably started with Mass Effect (BioWare, 2007) where miniscule decisions throughout the game, such as saying something rude instead of polite to an in-game character, alters the story route; sometimes greatly. The way in-game characters interact with you differs based on decisions that the player made at the start of the game (such as character back-story) and throughout the game, for example you can develop a rude and ruthless reputation and thus certain characters fear you. The game ultimately ends

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based on the way the player had played the game, good or evil, selfish or generous, etc. It is an unofficial standard to have this type of user-defined game mechanic in RPG style games post-2007, evident in most major RPGs of the past few years.

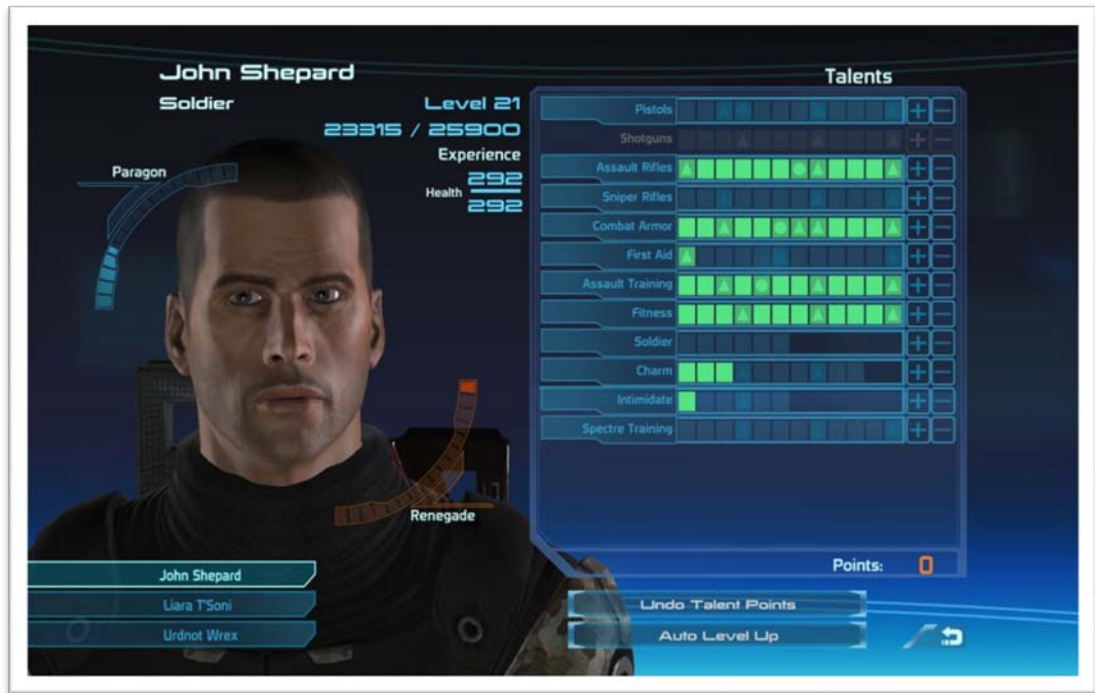


Fig 4 – Character skill assignment and character customisation in Mass Effect. (BioWare, 2007)

Something interesting and immensely immersive happens when you introduce a narrative to an interactive platform, a story that the player can control: a ‘Ludonarrative’ is created. Ludonarrative is distinctly different from predefined narrative, it is the story that the player creates whilst they are playing; it is “unscripted and gamer-determined”. Bissell describes the differences as “One is the framed narrative of the game itself, set in the fictional “present” and traditionally doled out in what are called cut scenes or cinematics, which in most cases take control away from the gamer, who is forced to watch the scene unfold.” (Bissell, 2010, p. 37)

It can be argued that video games only exist as ludonarrative as in most cases narrative does not function as an interactive form. Narrative is a fixed straight line from origin to destination, ludonarrative is dynamic with ability to leave the narrative-line and follow a tangent, in some cases the experience does not return to the original narrative line. One is fixed, the other is fluid.

Take for example a player playing Grand Theft Auto IV (Rockstar North, 2008), after a short cut scene that dictates the narrative, the player has the task of driving across the city to a designated location. The player can take any route or method of transportation they wish whether it be walking, driving either an owned or stolen car, take the train or fly a helicopter. Say the player chooses the car, they can either drive safely abiding the rules of the road and laws in order to arrive at the destination or they can chose to break as many laws as possible during the journey, crashing into cars, running red lights and running pedestrians over. This would alert the in-game police igniting a pursuit; the situation could escalate to epic proportions, hundreds of police involved, S.W.A.T. teams, road blocks and police helicopters. The player may escape police arrest by losing the perusing legion and arrive at the destination just as they would if they drove lawfully. Both series of events result in the player starting in the same place and finishing in another but the ludonarrative between the two methods are uniquely different.

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Whilst video games continue to increase the ludonarrative immersion with every game release (for example the increased narrative freedom between Assassin's Creed (Ubisoft Montreal, 2007) and Assassin's Creed 2 (Ubisoft Montreal, 2009)) some games take the opposite approach of creating a guided experience using a restrictive narrative. One game that takes this approach is Braid (Number None, Inc., 2008), the brainchild to Jonathan Blow, one of the video game industries most militant game designers. Ironically, Blow argues that a video game cannot tell a narrative because of its fundamental structure as an interactive format.

Stories are about time passing and narrative progression. Games are about challenge, which frustrates the passing of time and impedes narrative progression. The story force wants to go forward and the "friction force" of challenge tries to hold story back. (Blow cited in Bissell, 2010, p. 93)

Despite this Blow achieved huge success with his video game Braid. Braid follows the traditional platformer style of game where one level leads to another, following a linear 'straight-line' narrative with little-if-no deviation resulting in a basic and restricted ludonarrative. Blow utilises a complex narrative, coupled with gameplay that compliments the narrative in order to promote an immersive experience, allowing the story to progress the experience whilst the gameplay provides the vehicle.

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Blow believes that video games have a strong “umbilical attachment” to that of films. Whereas video games started as nothing more than gameplay with a simple narrative attachment, the game industry now seems to be leaching directly from the motion picture industry in nearly all aspects: sound design, graphic design, visual effects and even narrative development. So much so that video games are sometime exaggerated at ‘interactive movies’. Final Fantasy XIII (Square Enix, 2009) is the newest release of the Final Fantasy franchise, a series of games that started with a unique gameplay mechanic and a basic storyline to progress the narrative; but each of the sequels has been incorporating increasingly more influences from film and reducing the amount of gameplay elements. This is most evident in the latest release (Final Fantasy XIII) where gameplay seems more of an after-thought rather than an intricate part of the game’s narrative. It is evident that a great amount of work and resources went into the days-worth of cut scenes, storyline and animation, but the structure of the game suffers from this narrative-domination. The experience is broken down into: run to a location, fight some enemies then watch a lengthy cut-scene. Run to a location, fight some enemies then watch a lengthy cut-scene (Repeat for 50 hours of playtime).

Corridor after corridor, drab surroundings, boring fights that never seemed to end – even the fights that were just run & go seemed too long and boring.

Slight change in scenarios here and there but no freedom of movement and nothing but fight after fight... nothing else. No silly puzzles. No nothing.

(Dađa, 2010)

In effect, too much narrative and film dominates the interactive experience, yielding the interactivity almost pointless. Yet the game is still extremely immersive because of the visual and narrative techniques borrowed from film. Virtual cameras that behave like physical cameras, depth of field and many other visual effects borrowed from cinema make for an extremely graphically immersive experience, whilst writers with a background in film provide the universe, storyline, dialogue and events that bring life to the experience. Just like film has its roots in theatre stages, video games grow from the fertiliser left by films and books.



### 3. Gameplay

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“Game play is the formalized interaction that occurs when players follow the rules of a game and experience its system through play.” (Zimmerman & Salen, 2004, p. 303)

It is often put-forward that games are rules, Jesper Juul cites this in the classic game model: a series of features, the first being: “1. A rule-based formal system;” (Juul, 2005); (see Appendix 2). We often consider rules to be restrictive; the more rules there are, the more an activity is restricted. But in the case of digital constructions, rules define possible outcomes. For example, a character is travelling down a road where they reach a fork in the road: One road will take them through a beautiful plain, the other ensures death. These are two rules, each with different outcomes; the activity of choosing a path equates to interactivity (gameplay) as defined by Juul’s ‘new definition’ of video games: “2. Variable, quantifiable outcome: Games have variable, quantifiable outcomes.” (Juul, 2005, p. 36)

With this in mind, it is apparent that rules increase freedom in video games by increasing the amount of outcomes, increasing the potential ludonarrative experiences; and thus promoting immersion.

No video game can contain only gameplay elements. Just as a narrative requires a gameplay mechanic to provide interactivity, gameplay requires narrative to progress the experience. Gameplay rules are a skeleton, but bones can’t move on their own,

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narrative elements provide the muscle, but muscle doesn't move anything without a frame.

There are two genres of video game that utilise gameplay to promote immersion most successfully: Simulation/Sport and competitive multiplayer. These genres of video game tend not to incorporate immersive narrative elements, and are instead characteristic for utilising rich gameplay to create an immersive experience. Sport and simulation genres of games rely heavily on realism (and in the case of some driving games, 'hyper-realism') to immerse the player, whilst both sport/simulation and multiplayer games use competitiveness to draw in the players senses.

There is a large array of books such as Michael Kane's book *Game Boys* (2009) which analyses the culture of competitive gaming, and the promises of unparalleled immersion brought with every game release. Unlike simulation games (such as driving) that pull the player in by exciting their senses, competitive games (often First Person Shooters (FPS)) use the players urge to win as a method of immersion. Unlike other game genres that use an arsenal of techniques in order to immerse the player, players of competitive games willingly suspend their disbelief much easier for the sake of winning. Whilst interviewing a group of avid gamers that consider themselves to be competitive players, it became apparent that the virtual world they were navigating seemed more 'real' to them than a less-experienced player would. It was as though they were looking through a window rather than at a computer

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screen. Jokingly, they would physically poke and prod each other as they were playing Unreal Tournament 3 (Epic Games, 2009), the humour being that the victim of the physical stimulus was too transfixed, too immersed, in the experience to register they were being poked. In essence, the level concentration expressed by the player immerses them. Jesper Juul explains this as the 'pull' of a video game, which can be interpreted as the 'willing suspension of disbelief' (Juul, 2010).

However, these two genres are increasingly being absorbed into a fairly new category of video games: the Casual Game. The casual game target an audience that do not typically play video games: "Players of these casual games are not required to possess an intimate knowledge of video game history or to devote weeks or months to play." (Juul, 2010). Reginald Fils-Aime, President and COO of Nintendo of America describes casual gamers and players who are "not so interested in "graphics" as such, who have little knowledge of video game conventions and are therefore easily intimidated, and who desire "quick fun"." (Fils-Aime cited in Juul, 2010)

In their basic form, casual games are essentially gameplay driven experiences, often focusing on a single gameplay mechanic; simplicity being a key characteristic of casual games. Tiny Wings (Illiger, 2011) by game designer Andreas Illiger, like most casual games, has almost no narrative and follows a single gameplay method with the only user input being the ability to touch the screen in order for the bird to

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descend (Fig 5). Similarly, Fruit Ninja (Halfbrick Studios, 2010) is constructed on the basic premise of slicing fruit in order to increase the score (Fig 6).



Fig 5 – Tiny Wings (Illiger, 2011) input instructions.



Fig 6 – Fruit Ninja (Halfbrick Studios, 2010) is built upon a single basic interaction method.

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Casual games, unlike other types of game that provoke immersion through realism, gain immersion through player effort; as cited in Juul's definition of a game (Appendix 2): "4. Player effort: The player exerts effort in order to influence the outcome. (Games are challenging.)" (Juul, 2005, p. 36).

Juul explains that the 'investment of player effort' creates an emotional attachment between the player to the outcome of the game or action as the 'investment of energy into the game makes the player responsible for the outcome'. (Juul, 2005, p. 40) It is therefore presumed that the amount of effort exerted by the player is in direct correlation to the sense of achievement or reward upon successful completion; and thus increases the player immersion through concentration, just as the competitive gamer described previously. It is the sense of achievement that provides the pull and concentration (through effort) required that creates an immersive experience; just as it states in Juul's fifth feature of video games (Appendix 2).

## 4. The Middle-Ground

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As stated previously in this study, video games cannot exist without rules (gameplay) and neither can it operate without a narrative to explain the rules. Thus all video games are technically in the ‘middle-ground’ between narrative-dictated and gameplay-driven experience. It is the balance between these two fundamental attributes that creates some of the most immersive video game experiences available, as Jonathan Blow explains: “A good game attracts you with melodrama and hypnotizes you with elegant gameplay. In effect this turns you into a galley slave who enjoys rowing.” (Blow cited in Bissell, 2010, p. 93)

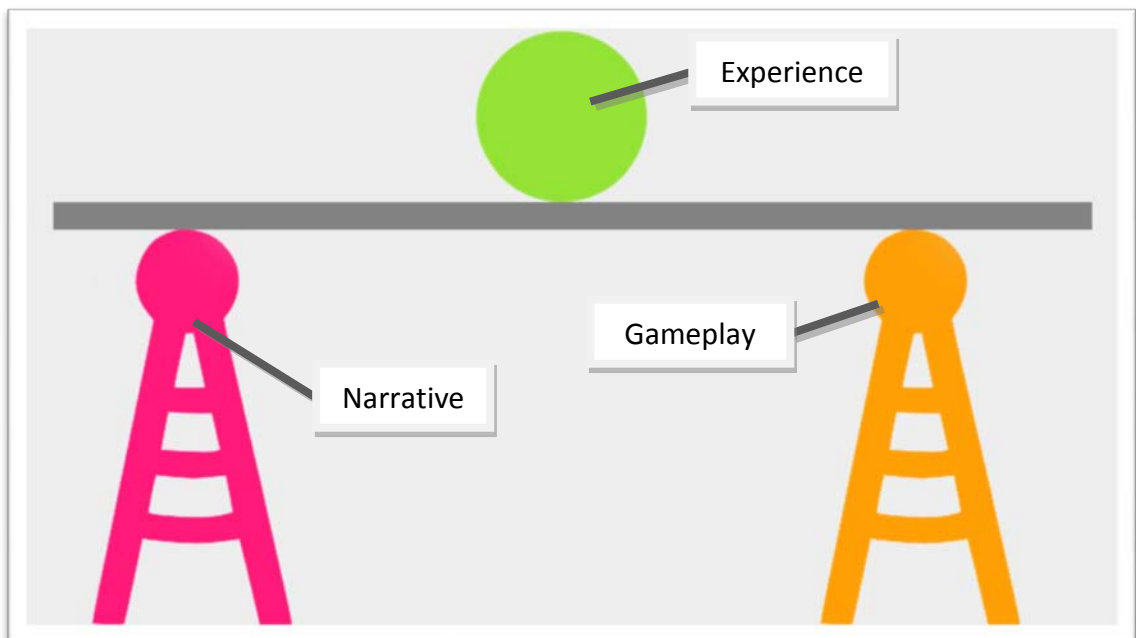


Fig 7 – Narrative and Gameplay supporting the Experience.

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Based on this analysis of video game conventions I was able to conclude that video games require both narrative techniques and gameplay methods to support an immersive experience (Fig 7).

This is increasingly evident in newer video games, whereas older games such as Super Mario Bros (1985)(Fig 8) follow a simple gameplay mechanic with almost no narrative elements (Similar to modern Casual Games), newer games now incorporate much more complex gameplay methods inside of a substantially richer narrative. In comparison to the almost minimalist nature of Super Mario Bros, Mirror's Edge (EA Digital Illusions CE, 2008)(Fig 9) contains a vast array of mechanics rendered in a visually rich environment, guided by a structured linear storyline including game-world definition and character development whilst utilising countless effects borrowed from movies, such as the handy-cam first-person perspective used throughout. The story of Faith (the lead character) and her efforts to help her sister provide the driving force and the emotional attachment players experience, whilst the unique gameplay immerses the player through first-person perspectives and realistic physics.

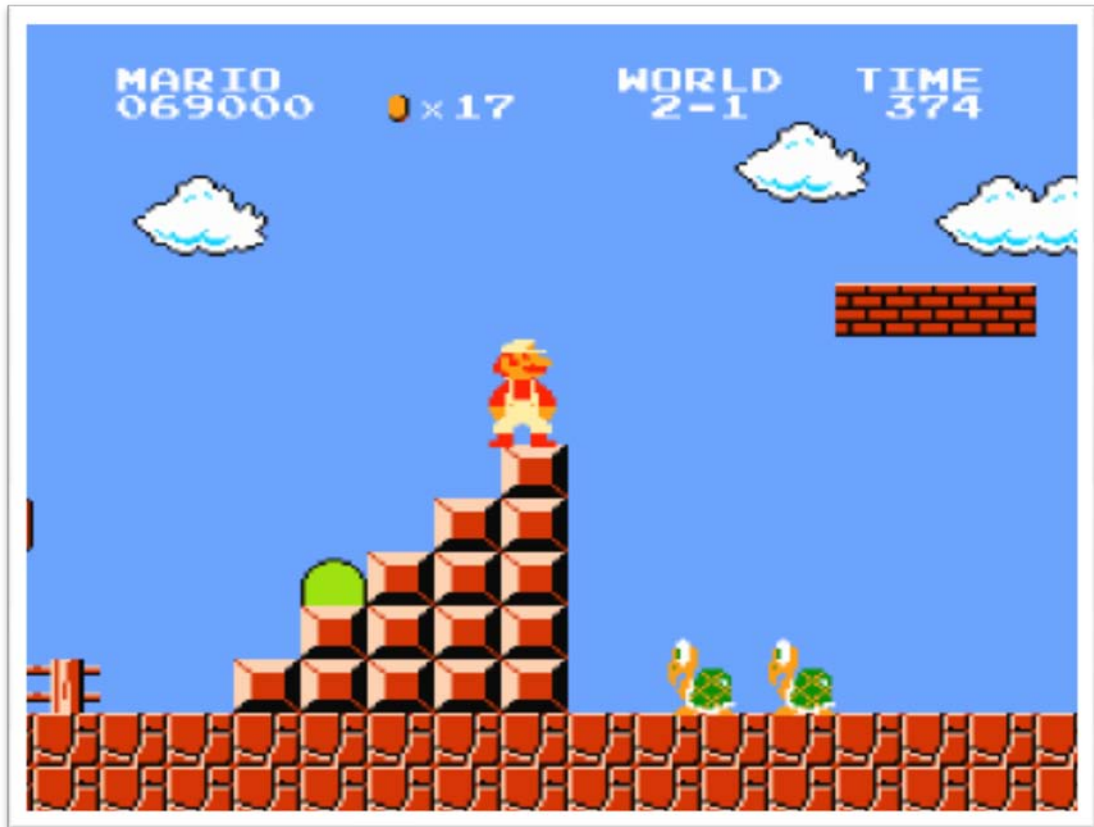


Fig 8 – Super Mario Bros. (Nintendo Creative Department, 1985)



Fig 9 – Mirror's Edge (EA Digital Illusions CE, 2008)



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In a survey I had performed, where I questioned a range of different aged participants, with varying tastes in video game genre, 40.4% said that video games that incorporate both rich narrative elements and gameplay methods were the most immersive; participants cited such games as *Borderlands* (Gearbox Software, 2009) and *Gears Of War* (Epic Games, 2007) as examples. The 'both' choice of answer received the highest amount of votes of the survey, where 'narrative' achieved 34% of votes and 'gameplay' only 23.4% (See Appendix 3).

## 5. Technology

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Unlike narrative and gameplay that promote immersion through virtualisation and theory, technology has been making leaps-and-bounds at increasing physical immersion. Ultimately, narrative and gameplay are limited by available technology. The 'holy-grail' for total immersion lies with hardware, commonly referred to as VR (Virtual Reality) technology. VR has been around since early consumer video games consoles through use of systems such as the Aura Interactor Virtual Reality Game Wear (Aura, 1994) but has never been truly fully immersive. The goal of hardware immersion is to project the player into a virtual environment whilst kinetic feedback responses bring the virtual into the physical.

The most basic of technologies that bring the virtual into the physical is force-feedback controllers. This is where the controller the player is holding rumbles at certain instances such as when a character controlled by a player receives damage in a video game. Even this most basic of physical feedback responses are extremely immersive; evident by the controversy generated when Sony Computer Entertainment released the PlayStation 3 without this feature.<sup>6</sup> Hardware is used to stimulate our many senses, whether it is 7.1 surround sound, physical stimuli, wide-view displays through IMAX or HMD (Head Mounted Display), 3D visuals using RealD

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<sup>6</sup> (Rumble, Rumbled – Harison on SixAxis, ThreeSpeech, 2006)

or NVidia 3D Vision, or even a scent necklace<sup>7</sup>; each technology is designed to immerse the user into a virtual environment.

Technology is progressive, and thus progressively immersive. Consoles started with a simple joystick, later a few push-buttons, then variable buttons, then suddenly a leap to what Juul calls ‘Mimetic Interfaces’ such as the Nintendo Wii (2006), the Wii Balance Board (2007) and the Microsoft Kinect (2010): “They have physical interfaces that mimic the action in the games [...] The Wii Sports tennis player must swing his or her arm in order to swing the racket in the game.” (Juul, 2010, p. 103)

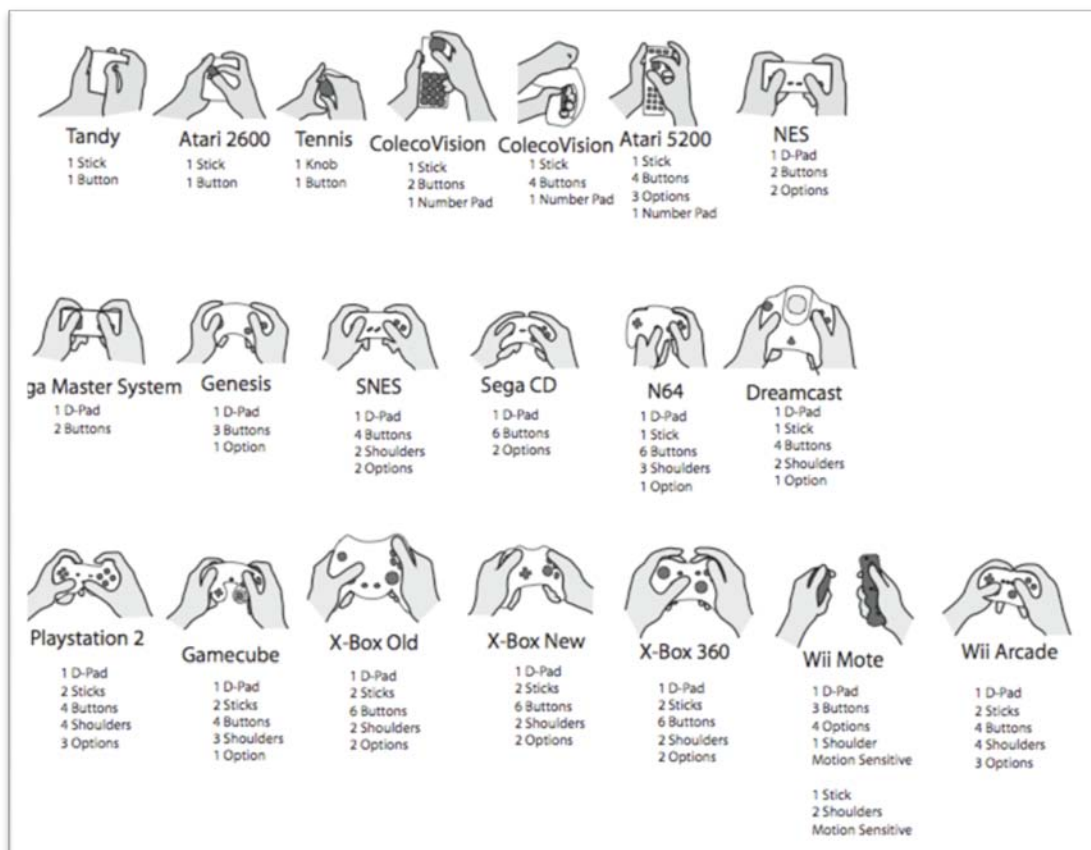


Fig 10 – A history of video game console controllers. (Lopez, 2009)

<sup>7</sup> (Scent Collar, AnthroTronix, 2009)

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Mimetic interfaces encourage us to imagine that items we are wielding, such as a Wii controller, are in fact a tennis racquet or a sword. Juul identifies that traditional 3D games require the player to imagine they are in a virtual environment whereas mimetic games allow the player to play from their perspective in the physical environment, and instead the virtual world extends past the forth-wall and into the physical. This especially true with controller-less interfaces that utilise technologies such as the PlayStation Eye (2003) or Kinect to use the physical environment as the virtual platform, these are often referred to as Augmented Reality Games (ARG).

Julian Oliver's augmented reality game LevelHead (2009) exhibited during Space Invaders at FACT demonstrated this technology, using a webcam to capture the player moving a box, which when displayed on a projector, superimposes a virtual environment into the small box (Fig 11). The manner in which the player holds the boxes directly affects the actions of a figure contained in the box.

Similarly, and perhaps more powerfully, EyePet (SCE London Studio, 2009) utilises the PlayStation Eye to capture the physical space and display the feed on the television as a mirror. A creature is superimposed into the environment where it explores and interacts with the physical environment on the screen. Players are able to play, stroke and interact with the virtual creature physically creating a virtually immersive experience in a physical space (Fig 12).

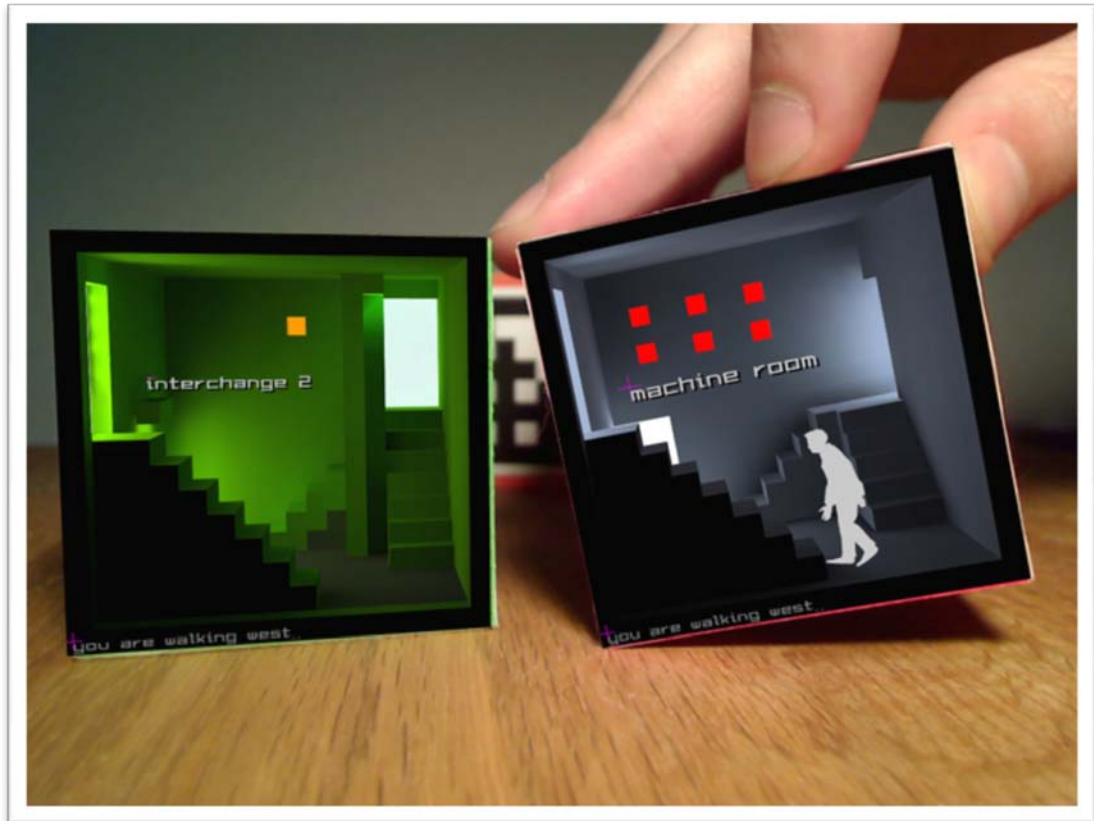


Fig 11 – Julian Oliver’s LevelHead (Oliver, 2009)



Fig 12 – Animal chases shoe in EyePet. (SCE London Studio, 2009)

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It was expected when exposing twenty volunteers from a range of age groups to a series of different video game platforms and interaction methods, that all of the participants would identify the mimetic interfaces as being the most immersive. However, after they had experienced all platforms, one of the participants identified mouse and keyboard interaction as the most immersive to them, and another found controller interaction to most immersive (Appendix 4). When I enquired as to why, one explained that they find “the first person perspective is easier to control with a mouse” whilst the other explained that they “know where all the buttons are, subconsciously [...] controlling an FPS is second-nature.” It is therefore apparent that developed skill sets aid in promoting immersion, but it is only after acquiring these skills that they become effective; unlike other participants who were continuously looking at either the floor or the ceiling when playing a First Person Shooter with a controller or mouse.

## 6. Conclusion

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Video games started with little more than a simple joystick that moved two almost narrative-less paddles along the edges of a screen (Pong, 1978). Now over thirty years later we are now able to dance around the living room in order to control a virtual character and embarrass ourselves to a worldwide audience (Dance Central, 2010) or we can dive into the most extreme of action adventures that were previously restricted to the cinema or those with a dreamier sense of reality (Uncharted: Drake's Fortune, 2007).

Video games are continually increasing the amount of techniques borrowed from literature and cinema in order to develop rich narrative experiences, coupled with increasingly immersive gameplay methods that capture audiences and pull them into a virtual experience. Technology guides the way for physical connections between the real world and virtual plains, and given its track-record, games are only going to get more real.

“Games have evolved from simple tests of skill, to complex simulations. They offer an interface that attracts millions of other players around the world. The next stop is total integration – when gaming platforms begin to incorporate our personal information and co-opt devices from the real world. Soon we will stop playing games. They will start playing us.” (Walsh, 2009, p. 210)

**Word Count:** 4,374



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# Appendix 1: Game Categorisation

The following are games that I have either played or witnessed a third-party experiencing within the past year. The games are divided into two columns: Narrative Based, and Gameplay Driven. Games listed in the 'Narrative' column are games that are primarily story defined or would not be a playable experience without an extensive narrative structure. Games in the 'Gameplay' column are games that utilise a set of rules in order to structure the experience; these games may contain a narrative structure, but these games do not rely on this to give the game a foundation.

Some games straddle both categories; they incorporate both aspects in order to create an experience. These games either have a strong gameplay structure but rely on a narrative to support the rules, or they contain a story foundation but utilise gameplay methods. The games that straddle both columns would 'collapse' if either the narrative or the gameplay were removed from the experience.

Narrative Based	Gameplay Driven
	Angry Birds
	Assassins Creed series
Avatar: The Game	
	Batman: Arkham Asylum
	Battlefield 2: Bad Company 2
	Beat Hazard
	Bejewelled
Bioshock	Blur
Braid	Borderlands
	Burnout series
	Call Of Duty: Modern Warfare 2
	Castle Crashers
	Chime
	Crackdown
	Defcon
	Devil May Cry series
Dragon Age: Origins	Evil Genius
Fable series	Farmville
Fallout series	FixPix
Final Fantasy series	Flight Control HD
	Fruit Ninja
	Fuel
	Gears of War series
	Gish
	Grand Theft Auto series
	Greed Corp
	Half Life series
	Halo series
Kingdom Hearts series	Left 4 Dead series
The Legend of Zelda series	
The Longest Journey	
Machinarium	
Mass Effect series	
Mini Ninjas	
	Mario series (Mario Sunshine, Mario Galaxy)

## Narrative Based

## Gameplay Driven

### Mirror's Edge

Myst series  
Neverwinter Nights series  
Oblivion  
Overlord series  
Penumbra: Overture

Osmos  
Peggle  
Plants Vs Zombies  
Poker Night at the Inventory  
Pong  
Portal  
Puzzle Quest  
Rayman: Raving Rabbids  
Restaurant City  
Robot Unicorn Attack  
Rockband series  
Scene It  
Shatter  
SimCity 4  
The Sims  
Space Colony

Sam & Max series

### Splinter Cell series

Star Wars series  
Strong Bad's Cool Game for Attractive People series

Starcraft  
Super Meat Boy  
Super Smash Bros. series  
Team Fortress 2  
Tetris

### Tomb Raider series

Tycoon Games  
Unreal Tournament series  
Viva Piñata  
World of Goo  
Zen Bound  
Zombie Driver

# Appendix 2: Jesper Juul

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## A New Definition: Six Game Features

From this, the game definition I propose has six features:

1. *Rules*: Games are rule-based.
2. *Variable, quantifiable outcome*: Games have variable, quantifiable outcomes.
3. *Valorisation of outcome*: The different potential outcomes of the game are assigned different values, some positive and some negative.
4. *Player effort*: The player exerts effort in order to influence the outcome.  
(Games are challenging.)
5. *Player attachment to outcome*: The player is emotionally attached to the outcome of the game in the sense that a player will be a winner and “happy” in the case of a positive outcome, but a loser and “unhappy” in the case of a negative outcome.
6. *Negotiable consequences*: The same game [set of rules] can be played with or without real-life consequences.

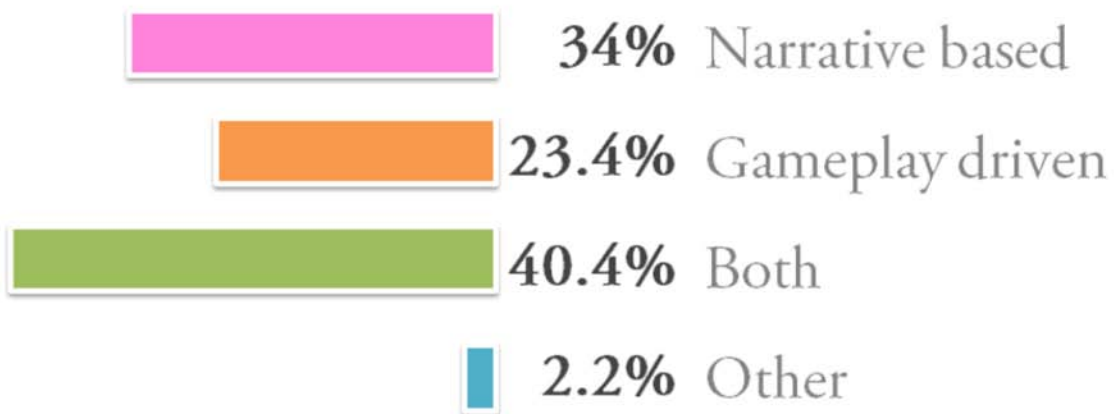
In short form:

A game is a rule-based system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome, and the consequences of the activity are negotiable.

## Appendix 3: Gameplay Vs. Narrative Survey results

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Which type of games do you find more immersive? -47 Participants



## Appendix 4: Immersive Technology User Testing

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User testing: Which did they find more immersive?

- 20 Participants

