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***“Diaries of a Traveller” -***

***Creating Innovation in Mobile Game Design through the application of  
Procedural Content***

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## **Acknowledgements**

I would like to thank my supervisors Max Schleser and Tanya Marriott for their direction, dedication and invaluable advice along this journey.

I would also like to express my deep appreciation to Julienna Preston, Julie Bevan, Audrey Dench and Timothy Savage for all their support, constant help and moral support they all provided.

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# 1 - Introduction

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## 1.1 - Abstract

This design-led research project investigates social media integration and gameplay personalisation via Procedural Content Generation and its potential as mechanism to enhance game experiences. *"Diaries of a Traveller"* is an iPad game presented as a game prototype for this MDes study. The objective of this research is to develop an understanding of how personalisation may affect gameplay, narrative and consequently the game as a holistic experience.

With the advent of tablets and mobile devices in the last years, new prospects and possibilities for the creation of games have emerged. Internet connectivity, mobility and social media integration provide new opportunities to enhance game experiences. *Diaries of a Traveller* explores how Internet connectivity, mobility and social media integration can create a more dynamic and immersive game experience. This iPad game is designed to be played in airport lounges. The game plot is dynamic, using personalised information from the player's own device to construct a unique narrative and gameplay experience. Furthermore, the research examines theoretical frameworks of "Games as New Media" (Hjorth 2011). The iPad game is developed using the game engine Unity 3D and contextualises the prototype as a case study through the mass culture phenomenon of pervasive games.

**Keywords:** Video Games, iPad Games, Mobile Devices, Procedural Content Generation, Dynamic Content, Social Media Integration, Personalisation, Customisation, Game Design, Unity 3d, Interactivity, New media.

## 1.2 - Diaries of a Traveller:

The iPad as mobile device allows users to allocate themselves to any space while using it as game device. The idea of creating an airport as the game environment was a way to expose emotional vulnerability as one of the main features of that particular space. Here the idea of an airport as a space within the game realm, as well as the physical space occupied by the player while playing the game made sense because it is a closed environment in which specific rules apply. The same occurs within the game – events, narrative and actions from the game characters are only understandable if placed inside that particular context. Therefore, an airport as a holistic space on its own has the same characteristic of games – an independent set of rules.

## 1.3 - Research Questions:

This project also proposes new mechanisms of personalisation in game design by means of Procedural Content Generation in order to enhance the game experience on mobile devices (primarily the iPad). Design-led research is used to explore design practices for iPad games

This MDes project will address the following questions:

- Can Procedural Content Generation (dynamically generated content) be used to create new strategies in game design?
- Is there a difference between customisation and personalisation, and can this difference be exploited to affect game design and game development approaches?
- Can game design be advanced through peer learning within the community of game designers?

## 1.4 - Hypothesis:

The research investigates possible new game mechanisms which provide personal experiences by introducing Procedural Content Generation (dynamically generated content) to the gameplay, and explores the impact that mobility and physical space has on personalised game experiences. Furthermore, this study explores how mobile gaming has become a mass culture phenomenon and examines the impact of social media and the dissemination of user-driven content and information on gaming culture specifically. This study aims to define customisation and personalisation in gameplay in a meaningful way in order to assist game designers and developers, facilitating the creation of cutting-edge games for new-media mobile technologies.

**The hypotheses are:**

**Is possible to infuse personal data and user-driven content into a game narrative in order to create a richer and more personal game experience?**

*If dynamic content retrieved from social media networks and the user's device is applied via Procedural Content Generation into an iPad game, the game experience can be more personalised and as a consequence will enable new design strategies and constructions of game narrative.*

**Will be possible to create new design strategy for the iPad by means of creating a distinction between customisation and personalisation?**

*If a clear difference between customisation and personalisation was perceived by game designers, new game design strategies could potentially be created.*

**Can peer learning create new opportunities for game designers (aspirants and hobbyists) who have little knowledge of game development?**

*If new game designers (aspirants or hobbyists) engage into a process of peer learning, opportunities in the education process of game design may emerge. That could also lead to new game strategies by using online forums, downloading free game assets and experimenting during the learning process.*

### **1.5 - Method:**

This MDes explores game design strategies for the iPad. The design process was inspired and evaluated by analysing mechanisms of personalisation in games such as *SimCity*, *Racer Driven Grid* and *The Sims*.

The value of personal experiences (primarily in mobile games which may bring some innovation to game design on other game platforms) is referenced through the application of social media content within the game. The research method used throughout this MDes project is based on the discipline of

design-led investigation. *Diaries of a Traveller* was created through an interactive design approach and a series of experiments.

*Diaries of a Traveller* was a result of investigation based on the relationship between physical space and gaming, as well as the contribution of the environment on personalising the game experience. As iPad users are capable of playing games in any location, the constraints regarding space and mobility are non-existent when compared to other game platforms. Therefore, physical space may potentially create an interesting process of individual interpretation if the game environment mimics the player's location. The chosen space was an airport as it carries an inherent emotional vulnerability to space along with a set of independent rules, a feature which is endemic to all games. Players would play this game while at an airport, therefore enhancing the game experience.

The objective of this MDes is to explore new game design methods and game design practices for mobile platforms (primarily the iPad) by incorporating user-driven content, as well as information from the player's current location into the game through Procedural Content Generation. Furthermore the research will investigate the potential of personalised content within games, which differentiates mobile devices from game consoles and other game platforms. *Diaries of a Traveller* aims to increase the player's engagement with the game narrative. In addition, the argument will be presented that game democratisation can be seen as a new phenomenon which is permitting gamers to also become game developers (whether as a hobby or a career). Finally, this exegesis embraces the new wave of hobbyists and aspiring game developers who primarily have no experience in game design or development, but are passionate enough to engage with game design. This process is at the forefront of a media transformation that has major repercussions for the design world.

## 1.6 - Design Practice:

This project will explain how personalisation can be used in a variety of mechanisms which potentially may enhance game experiences on mobile devices and demonstrate this concept in practice through the iPad game prototype *Diaries of a Traveller*. By providing individual experiences without much effort on the player's behalf, game programmers and designers could potentially take advantage of PCG studies to create innovation in gameplay. The design process combines various techniques including crafting original 3D models in Maya and embedding interactive elements such as social media integration and new game mechanics for touch-screen on the iPad.

## 1.7 - Technical Aspects for the Mobile Game:

Designed and composed by Luiz Dos Santos

- **Platform :** iPad
- **Engine:** Unity 3D Pro (IOs deployment) and/or PC deployment
- **3d Models:** Autodesk Maya
- **Textures:** Adobe Photoshop
- **Sound FX and Music:** Sounds effects and music for the game using Cubase and a variety of virtual instruments played over a MIDI keyboard



## 1.8 - Explanation of Terms:

Common terms used throughout this Exegesis. These terms are explained here in relation to this project rather than the overall definition.

**Algorithm:** A process of mathematical calculation used during game programming. It is used to create game mechanics such as AI, environmental changes and NPC behaviour.

**Dynamic Content:** Content generated dynamically (in real time), very commonly used in web pages.

**Game Level:** The space available for players (maps, stages and world) to interact inside the game environment.

**Input method:** Any method which allows players to control characters or interact within the gameplay. Touch-screen, joystick and motion sensors are some examples of input methods used in game design.

**Level Design:** The creation of game levels (world, environment, stages, and areas).

**Manual Method:** A procedure which creates game content before play commences.

**Mobile Games:** Any game that can be played on smartphones, cell phones and tablets. This project does not use the term “mobile games” for games played on hand-held game consoles.

**Non-Playable Character (NPC):** Characters that is present in the game world which players may interact with but cannot directly control.

**Procedural Content Generation (PCG):** A process which creates game content in real time during play. This content is generated algorithmically instead of manually. Although PCG predominantly uses algorithms as a method to generate game content, for the purposes of this project the term

PCG is also extended to all methods which generate content “dynamically”. Therefore this project takes the concept of PCG as content that is dynamic but not necessarily generated algorithmically.

**Web 2.0:** A term dating from 1999 which describes any sort of web page that is not static. These web pages allow users to interact and collaborate with each other. Social media networks such as Facebook and Twitter are examples of web 2.0 websites.

## 1.9- Overview

Smartphones and tablets represent a new frontier for electronic gaming. With the advent of tablet and mobile devices in the past years, (especially Apple's iPad), new prospects and possibilities for the creation of innovative games have emerged. Along with the iPhone, the iPad has recently become a major device in the game industry which is allowing game players to perceive video games in a whole new way. Games have become one of the most popular app categories in mobile devices, not only on Apple's IOS operating system but also on Google's emergent Android platform.

At the present moment both platforms combined offer half a million games<sup>1</sup>, developed over less than 4 years. This indicates a quantum leap for the game industry.

Because of this, mobile devices as gaming platforms have allowed never-before-seen implications on gaming over a short period of time. Quickly narrowing down the distance between casual and hard-core gamers, and allowing new mechanisms of game-play are two recent contributions that mobile devices have allowed as emergent technologies and gaming platforms.

Internet connectivity, mobility and social media integration have proved to be successful features which are enhancing the game experience on these new game platforms. Mobility for example, is starting to be infused into mobile games as a meaningful feature, allowing sensorial experiences to form the physical space and thus creating more engaging game-play and storylines. However, without innovative approaches, the combination of features alone is not sufficient to create enduring appeal across an increasingly broad demographic of game players.

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<sup>1</sup> Data retrieved from 148Apps.biz (<http://148apps.biz/app-store-metrics/>) on the 20<sup>th</sup> of September 2012.

***Recent years have seen both a boost in the size of the gaming population and a demographic diversification of computer game players. Twenty years ago, game players were largely young white males with an interest in technology; nowadays, gamers can be found in every part of society. This means that skills, preferences and emotion elicitation differ widely among prospective players of the same game.*** (Togelius & Yannakakis, 2011, p. 1)

As people become increasingly comfortable with disclosing their personal information to social media and other online networks, the opportunities to use individual information as a conduit for the creation of personalised game experiences have become an extraordinary object of study for scholars and game designers. (Togelius & Yannakakis, 2011)

Procedural Content Generation (PCG) could potentially be used as a method to randomise in-game elements and still keep the game experience personalised. This approach would not only allow a unique experience each time the game is played, but also infuses the idea of personalisation into the game narrative. Social media would be a key component for achieving such a feature.

Procedural Content Generation (PCG) combined with personal information is a relatively new component used to enhance game playability as well as providing a deeper level of immersive interaction.

***(...) Modern software development relies upon content creation, opportunity and demand for automatically generated personalized content increases in domains as diverse as e-commerce, news reading, web 2.0 services, human-computer interfaces and computer games.*** (Yannakakis & Togelius, 2011 p. 2)

This project focuses on the link between iPad games and identity (personalisation) and the importance of researching mechanisms of gameplay which provide deeper methods of interaction by using personal data via Procedural Content Generation (PCG).

As a result of the research component of this project I will present a prototype of an iPad game which illustrates some experiments regarding mechanisms of personalisation.

## 2 - Video Games

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### 2.1 Video games as Action

With over 30 years of history, video games have evolved from an underground cultural manifestation into an important part of mass culture (McAllistaer, 2006). Games have become cultural objects, instruments of research, a way to understand our own identity, and an important object of study for designers to perceive critical analysis. Understanding games is not only a way of understanding media and new media but also a way of comprehending contemporary mass culture by imposing a set of interrelated critical questions.

***Like art, games tend to reinforce larger cultural influences. Artists, especially those who followed the Surrealist and Fluxus movements, also tend to be especially critical of the ways games are tied to social structures, economies, and ideas of their times.*** (Flanagan, 2009, p. 88).

Alexander R. Galloway (2006) makes the following and rather interesting analogy to describe games as a mass-media component:

***“If photographs are images, and films are moving images, then video games are actions”*** (Galloway, 2006, p. 2).

*Action* is a formal and important element that differentiates games from other media. Although games are not the only media form that identifies “action” as a pivot component (other examples include interactive media and participation art), in the “game realm”, action is what defines games as a whole. According to Galloway, without action there is no game. Equally, without action a game (as a media form) cannot be ready for player consumption.

Galloway (2006) also defines games as an “action-based medium” that provide immersive forms of representation in a constant relationship between human being and machine. They are a form of activity defined by guidelines

driven by a pre-set context (which sometimes only makes sense within the game realm) in which players try to reach some sort of goal. Games can be imaginative, playful, and like any form of media, placed in any sort of descriptive genre. They can be played alone or even in a multifaceted social situation. Games are instruments of interaction.

Espen Aarseth's "Computer Games Studies, Year One" (2001), extends Galloway's statement. He believes games are a combination of both "object and process", which is why (according to him) games cannot be "consumed" like any other media.

***"To understand video games, then, one needs to understand how action co-exists in gameplay, with special attention to its many variations and intensities (...) They ( games) cannot be read as texts or listened to as music, they must be played"*** (Aarseth, 2011, p. 88)

Aarseth and Galloway's definition of games identifies certain dissimilarities when compared to other media forms. Their interpretation can also be rather antagonistic when compared with that of other authors.

Fank Lantz (2009) for instance, goes to the extreme of stating that games are not a form of media at all as they ***"do not carry an idea from one place to another"***. Lantz (2009) defends an argument that games establish a set of circumstances within which individuals play. Any connotation or meaning that comes out of the game is produced by the players, and was not necessarily intentional or enclosed within the game's design.

Although one could argue that his statement is rather 'extreme', some authors such as Aaron Delwiche (2006) share some of Lantz's viewpoints and perceive games as fitting much more appropriately into the "new media" rather than in the "media" category as they are not "consumed" passively.

Games are entertainment instruments with a unique medium collaboration process – software (data), machine (hardware) and organic being or beings.

This process on its own deploys a unique mechanism not seen in any other media manifestation.

Lantz's argument highlights one interesting aspect – games, like any art form, allow a process of individual interpretation.

## **2.2 - Physical space and a new world perception**

The ways through which we represent the world have changed. Experiences that were once primarily related to the physical sphere are now cultivated vigorously in virtual worlds through massively multiplayer online games (MMPOGs). From their embedded social and cultural mores, senses of community and identity are perceived in a whole new way. Virtual worlds have helped to narrow the gap between physical and virtual space. We no longer recognize the physical space as an instrument which delineates relationships, sensorial experiences or social interactions. We are now “free” to perceive the space as a source for new discoveries. (Ben, 2012)

As a result we have now moved from experiencing the physical space as a simple background to our everyday activities into experiencing an environment with more dynamic features.

For example through GPS (Global Positioning System), we now use the space with assisted direction giving us a sense of intimacy with a location we have never previously experienced or perhaps even heard of. Through mobile devices and their alternate reality and “geocaching” games, we transform the space into a playground or even a treasure hunt universe without the need for any physical transformation. (Silva, 2009)

We have learned how to reinterpret, rethink or even reimagine space on a daily basis – an on-going process driven not only by social and cultural factors but also by new technological innovations such as smartphones and tablets.

### 2.3 - Mobility as a meaningful feature in the gameplay

Games require some form of corporeal accomplishment to perform “action” (even if that summarizes into merely moving the player’s thumb). In order for a command (for instance walk, jump, grab or fly) to be understood by the machine, the player needs to perform some sort of physical activity. Tapping a touch-screen, moving a joystick in a specific direction or performing gesture which the game understands (Microsoft’s Kinetic and Nintendo’s Wii for example) are common mechanisms to convert instructions into specific “in-game” actions. This process of “watching and doing” where the gamer is the machine operator is capable of disconnecting players from the real world into a cybernetic reality which brings them to individual perceptions, as well as to more profound levels of subjectivity.

If each action within the game realm starts from a solid and integral relationship between player and machine, games open the debate on how this form of mass culture can bring new forms of identity representation or even personal conflicts to players while playing games.

***I embrace the idea that identities are neither wholly internally nor externally defined (in and outside the game space), and that audiences are always active but in video games necessarily so. It is crucial, thus, to focus on audiences and individuals when studying the importance of diverse representation of identity in games.*** (Shawn, 2010, p. 8)

Because we are in a period of time where technological innovations are changing the game scenario, the perception of “what is a video game” and how we perceive them are also changing. Therefore, this interpretation may also be much more connected to an individual perception than a plural one.

Gamers are now carrying devices capable of playing video games everywhere they go, bringing the idea of game pervasiveness and intimacy to a whole new level.

As mobile devices and tablets (media that also carry a various kinds of personal information) have quickly emerged as new game platforms, mobility is making players recognise games as a constant element in their lives. Once confined to the living room, games are now being played in public spaces<sup>2</sup>, using the somatic realm as an extension of the medium, or even overlapping physical and virtual environments in order to rethink the idea of “playground”.

***Mobile games evolve the process beyond what was previously possible within the technical and physical constraints of the traditional video gaming format. By extending the game beyond the screen and into the physical world, these games co-opt the player’s sensory experiences of real-world places as potential storytelling tools, mixing the physical and virtual to create immersive hybrid game worlds.*** (Bunting, Hughes & Hetland, 2012 p.144)

Body language may be performed in a much freer way when compared to a game played in a space within which unrestricted movement is not an option<sup>3</sup>. A sense of freedom from the physical space combined with sensorial features (visual and audio) may completely change the player’s perception regarding the game experience, the space as whole – and most importantly – the way games are being played.

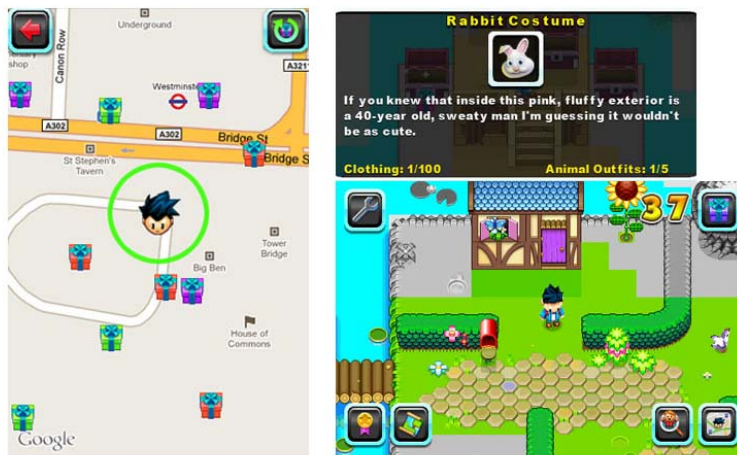
For example games that employ GPS (Global Positioning System) and location-aware features allow mobility to be a meaningful element that incorporates the physical space as part of the gameplay. In these instances,

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<sup>2</sup> Although ones could argue that handheld game consoles may have brought connotations of mobility much earlier than mobile devices and tables, they (handhelds) were primarily created to play games; diminishing the “necessity” to be carried with their users all the time. As result they are much less pervasive than a mobile device.

<sup>3</sup> This example could particularly be applied to consoles where the joystick (whether wired or wireless) needs to be located with certain proximity to the game console.

the storytelling process becomes quite individual as the player's sensitivity regarding the space is a key component to interpret the game as instrument which connects other elements from outside its realm.



#### 1000: Find'Em All

This iPhone treasure hunt game motivates players to explore their physical location in order to reveal in-game items through the use of iPhone's built-in GPS.

Here mobility is used as a meaningful feature in the game realm. Without it, the player would not be able to play this game.

FIGURE 1 1000: GLU GAMES.(2010) FIND'EM ALL (IPHONE) - GAME

## 2.4 - Tap, touch and swipe: the lack of joystick in touch screen devices

User interaction is an essential feature of game design – a satisfying input method is paramount. As mobile devices and tablets are providing a series of features that enhance the game immersion for its players (mobility, enriched game graphics, realistic physics, responsive Artificial Intelligence etc.), their input method has brought a new element into account – the lack of a physical controller. Touch-screen enabled devices in emergent game platforms such as tablets and smartphones are allowing new forms of interaction between machine and player, making players realise that games are media in constant change.

***Game industry research over the preceding decade had focused heavily on improving visual sophistication, such as high-definition displays and***

**3D acceleration, or on designing new interfaces that were reliant on visual feedback, such as touch-screens and wireless pointing devices.**

(Perron & Wolf, 2009, p. 92)

The absence of a joystick has become a way for players rethink the screen as an input method. As there is nothing between the game device and the player, physical contact with the medium is making games more individual than consoles, bringing a more personal level to game interaction. Therefore, the sense of control and in-game navigation is much more immersive than in a video game console which uses a game controller as a mediator between machine and player.

One example of this change is how consoles and game handhelds are embracing this change of input (influenced by mobile devices) into their new hardware. Nintendo's new game console – the Wii U™ (2012) transformed its joystick and motion peripheral into a touch screen device, allowing players to use it as not only a controller but an extension of the screen like Apple's iPad.



Evidence of the influence that touch screen devices (smartphones and tablets) are having on new game consoles. Nintendo's Wii U is now using a touch screen tablet controller hybrid as a "joystick" peripheral in order to play games. The device also is used as an extension of what is shown on the TV's screen or (as a mobile device or tablet) used as the primary screen to play games.

FIGURE 2 NINTENDO INC. (2012) NINTENDO'S WII U CONTROLLER

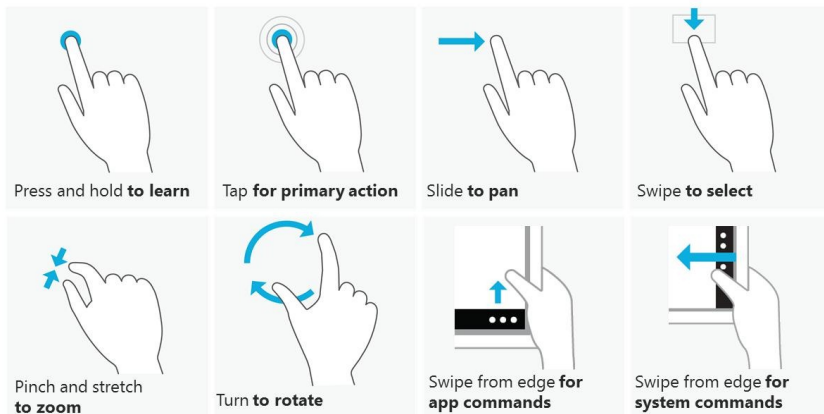
Sony's hand-held PlayStation Vita for example, included many mobile features such as GPS, 3G and touch-screen sensors (including one on the back of the device). Here the influence of mobile devices on other game platforms goes beyond the touch-screen input method.



PlayStation Vita™ (a second generation of Sony's PlayStation Portable™), can be used as a mobile device without calling capabilities as a large number of mobile features are included into the device. GPS, location-aware features, 3G connectivity and touch-screen are among those features.

FIGURE 3 SONY INC. (2012) PLAYSTATION VITA™

Smartphones and tablets are also having an important role in how players are “accepting” new methods of input and feedback. While many game players stress the importance of a physical controller in order to perform complex tasks inside a game environment, the touch-screen device allows simple input gestures to perform a variety complex game mechanics. Swiping, tapping, double tapping and touching (among other multi-gesture finger input methods) the screen are becoming a standard element for players to perform a variety of in-game tasks such as walk, jump and shoot. Here the touch screen has not only brought an easy way to control a game while holding a portable device, it has also brought games into non-gamers lives. By introducing intuitive forms of game interaction, games have become more “impartial” allowing a new audience of game players to touch-screen devices. As a result, games are rapidly becoming one of the main entertainment activities for a new demographic of players.



Some tap gesture commands used in a variety of mobile games. Tapping is used to perform common tasks such as walk, jump, shoot, aim etc.

Tapping a screen has become a much more intuitive way to control game characters as well as navigate through in-game menus.

FIGURE 4 IDEUM. (2011) TOUCH-SCREEN GESTURES ILLUSTRATION

Conversely, the lack of a controller has driven many game developers to emulate an “on-screen controller” to make established PC and console game players more comfortable while playing mobile games that were previously released on traditional platforms. An on-screen controller has become a feature which engages these players into the mobile game world (primarily when PC titles are ported or re-imagined for the mobile environment). Grand Theft Auto 3, Battlefield Bad Company HD and Call of Duty Black Ops Zombies are examples of ported or re-imagined versions of PC or console titles reworked for the mobile platform.



A gamer playing Call of Duty Black Ops Zombies - (a re-imagined version of a console/PC game by Blizzard/Activision Inc. 2010)

Many game developers are using mainstream PC and console game titles to also bring “hardcore” traditional game players into the mobile game environment.

The on-screen joystick emulation is one of the features to make the transition between PC/Console environment into a mobile one as seamless as possible.

FIGURE 5 ACTIVISION BLIZZARD INC. (2010) CALL OF DUTY BLACK OPS ZOMBIES (IPAD) - GAME

## Conclusion

This section has outlined how mobility is being incorporated into games as a meaningful feature, allowing new interpretations of both the physical and game spaces. As video games have become a persistent mass culture phenomenon that is in constant flux, new input methods are also being used in game design. Currently, touch-screen enabled devices are being used as a pervasive method to play games. The lack of a joystick (or other peripherals) is potentially making emergent game platforms such as mobile devices far more personal as there is no mediator between machine and player. This chapter has also analysed how video games differ from other media. The next section will introduce Procedural Content Generation (PCG) as a method of game design and present case studies to illustrate innovative uses of PCG as well as the potential limitations of this approach.

### 3 - PCG: A potential innovative method for Personalised Content Delivery

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#### 3.1 - Procedural content Generation (PCG): An Introduction

Procedural Content Generation<sup>4</sup> (PCG) is a method of content delivery that is usually related to computer-mediated design such as video game design, in which data is generated algorithmically rather than 'manually' (Togelius & Yannakakis, 2011). Content is generated based on a set of pre-defined rules and delivered in real-time to its user. PCG has been used by some game developers primarily as mechanism to randomly generate game levels, but its usability can go beyond its common use. Further research into this field could bring innovative game design strategies to game development. PCG, if used to dynamically personalise game elements such as narrative and gameplay, could potentially change the way we perceive games.



Procedural content generation used to create random fractals inside windows media player. Here the "content" is generated in real time driven by the frequencies of sound waves in a piece of music. Even if the same music is played again these fractals would be generated in a totally new way.

FIGURE 6 FRACTALS GENERATED WITH WINDOWS MEDIA PLAYER. - MICROSOFT INC., (2012). WINDOWS MEDIA PLAYER (VERSION 10) [SOFTWARE]

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<sup>4</sup> Procedural Content Generation (PCG) can be mistaken for dynamic content generation, which is a similar process but is primarily linked to web pages and not necessarily game development.

***In a digital media process the physical properties of the input data, light and sound waves, are not converted into another object but into numbers; that is, into abstract symbols rather than analogous objects and physical surfaces. Hence, media processes are brought into the symbolic realm of mathematics rather than physics or chemistry. Once coded numerically, the input data in a digital media production can immediately be subjected to the mathematical processes of addition, subtraction, multiplication and division through algorithms contained within software.*** (Lister, Dovey, Giddings Grant & Kelly, 2009, p. 15)

Although Procedural Content Generation is not a new concept, it has become a fascinating object of study in modern computer-interaction design. Its importance has slowly started to be recognized as an essential field of research for scholars and game designers.

***Both offline and online Procedural Content Generation (PCG) research have attracted great interest in recent years, for both gaming and simulation applications. Offline PCG has been applied to make the development process more efficient, while online PCG has been applied to improve the replay value and adapt difficulty level dynamically.*** (Togelius, and Yannakakis 2009, p. 2).

***The research on personalized and player-adaptive procedural content generation is an emerging field in recent years*** (Yannakakis and Togelius 2011, p. 3).

## 3.2 - Manual versus algorithmic method in Game Design

One of the most important steps towards a game's development is coding. Without the programming aspect, a game would not go beyond a collection of static 3D models in a virtual environment. Coding is necessary to add dynamic elements to a game (artificial intelligence, game-play mechanics, storylines, background scenery etc.) as well as allowing user interaction through a set of pre-established command lines. This process is generally done in game development software called the **Game Engine**, where the most popular<sup>5</sup> 3D game engines are Unity 3D®, CryEngine™, Havok™ and Unreal®.

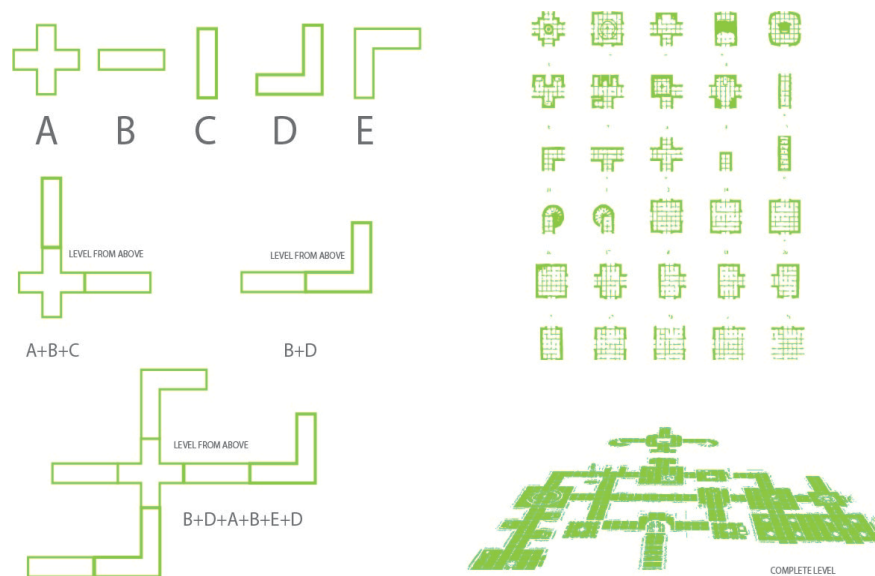
The majority of games are scripted before play (manually) in order to have all game content and behaviour follow the programmer's intentions as closely as possible. In other words, animations, textures and 3D models as well as other game features are created beforehand and nothing will change regardless how many times the game is played.

However, some games allow content to be generated algorithmically or "on the spot" which in some instances allows a more dynamic game environment or more immersive game-play. Procedural Content Generation can be used as method to deliver content which can include anything from random "enemies" placement around the game environment, and unsystematic behaviour by the game AI (Artificial Intelligence) through to real-time generation of entire game levels.

The majority of current games are developed using at least some form of Procedural Content Generation while others use PCG primarily as a method to constantly provide a unique player experience by randomizing the majority of game elements after each play-through.

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<sup>5</sup> Here, most popular means "commercially". These games engines are commonly used among mainstream game design studios.



Game level generated via PCG. Each “piece” may be combined to other pre-determined pieces creating random possibilities of level design in each play-through.

Ex1: Game design for level randomisation.

EX2. A more complex dungeon level with PCG

FIGURE 7 [UNTITLED ILLUSTRATION OF FERN]. (N.D.) RETRIEVED FROM [HTTP://RPG.DRIVETHRUSTUFF.COM/PRODUCT/103897/INKED-ADVENTURES-SQUARE-DUNGEON-TILES](http://RPG.DRIVETHRUSTUFF.COM/PRODUCT/103897/INKED-ADVENTURES-SQUARE-DUNGEON-TILES)

### 3.4- Can we generate everything algorithmically or dynamically?

The majority of current games are developed using at least some form of Procedural Content Generation (PCG) while others use PCG primarily as a method to constantly provide a unique player experience by randomizing the majority of game elements after each play-through. Yannakakis and Togelius, (2011) argue that game content creation is still largely manual.

SYNTH (2009) is one of the few exceptions to that particular “rule”. SYNTH generates all of its content in real time (music, textures, environment and game mechanics) providing a unique<sup>6</sup> experience to its players each time the game is played.

<sup>6</sup> Individual game experiences are based on randomly generated game elements during each play-through, thus partially achieving personalisation.

While SYNTH's approach may sound innovative and efficient (an answer to every game developer's dream), its art style and gameplay would more than likely not lead to mainstream game or sale success according to current market standards. In other words, the game is so different from what players are used to that numerous arguments have resulted between game critics and gamers regarding whether "SYNTH" can even be classified as a game at all, dismissing it as an experimental project from its developer.

SYNTH will be used as a case study in the next section.

### **3.5 - Games and PCG: Case Studies**

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While Procedural Content Generation has been used since the earliest computer games due their memory constraints which forced game developers to generate content algorithmically "on the fly", such a method was not merely an option but was in fact the only way to provide large game worlds. As game graphics back then were not even close to realism (large blocks of pixels and a very limited colour palette), PCG<sup>7</sup> usability was rather simplistic when compared to the way modern video games use it.

#### **3.5.1 - Spore (2008)**

One of the most commercially successful games to date, SPORE (2008) uses Procedural Content Generation in unconventional ways. SPORE, a game created by Electronic Art's Maxis and designed by Will Wright is a "god-mode" game where players control custom-made creatures across all stages of their lives (from cell form until adult life) in order to coexist with other species in an alien world. During the creature creation process players customise all the

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<sup>7</sup> Pseudo-Random Number Generators (PRNG) and Bit Generator (BG) were two of the methods used to achieve Procedural Content Generation in the first computer games.

creature's parts including limbs, body shape, and colour in order to define the creature's appearance and behaviour. Because of the number of possibilities based on the combination of parts (around 40 for each limb), one of the aspects chosen to create the creatures was the use of Procedural Content Generation. For example, if the player added wings the



Spore Creature Creator: After the creature is custom made by the player, animations are generated via Procedural Content Generation. In order to respond to large number of possibilities due to the number of parts PCG was the most viable option in this scenario. Also, each final creature is only a few KB in size, showing here another benefit of PCG – a small file footprint.

FIGURE 8 ELECTRONIC ARTS & MAXIS. (2008) SPORE CREATURE CREATOR (PC) - GAME

Game would generate animations such as flying or gliding to the player's character. If the player added four legs to the character, animations relevant to a quadruped animal would be also generated algorithmically. Moreover, based on the combination of parts applied to the creature, some specific behaviour would be generated on the spot (a creature with a large mouth for example, would produce a different sound compared to other with a small one).

Here **PCG** role was essential in order to extend player's creativity. Without PCG each creature would have to be modelled and animated beforehand which would limit the gameplay as well as the number of possibilities during the creature creation process. SPORE's innovative use of PCG regarding animation and character's behavioural features brought attention to not only

the game developers regarding the infinite possibilities that the PCG method can provide, but also to the game community which realised that games could provide a more immersive experience than previously thought.

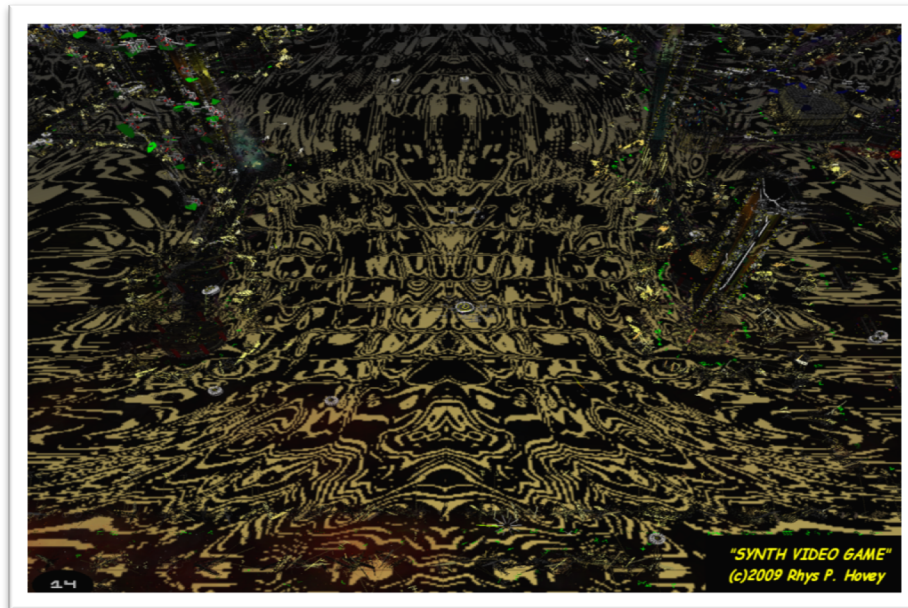
### **3.5.2 - SYNTH (2009)**

SYNTH is an independent strategic game with experimental art design where the player is required to navigate through PCG-generated levels. The game, developed by Rhys P. Hovey, is one of the few titles which generate all its features entirely algorithmically – graphics, environment, game mechanics and even music. Everything becomes new each time a player loads a previous game save or starts a new play-through. Personalisation in this game is partially achieved where individual game experiences are based on randomly generated game elements during each play through.

Although it sounds impressive at first, all these features were only successful because they fit into the game’s context – a game which takes the concept of “math” literally into the game design. The “psychedelic” art style was a result of SYNTH’s developer experimentation.

Many of SYNTH’s features were already used in previous computer games since the 80’s which make the possibility of a 100% PCG game a “reality”. In other words, SYNTH game art looks as if it was taken from a complex mathematical graphic. It is not a game that would necessarily achieve mainstream recognition. SYNTH is an “indie” game and as such it has no primary goal to achieve mainstream success or profit. Some game critics even describe it as “math art”, lacking features that would properly qualify it as a “game”.

SYNTH’s



psychedelic art design – entirely generated in real time via PCG, has been described by game critics as “math art”.

SYNTH is one of the few games that use PCG to create all elements in the game in real time – graphics, gameplay, Artificial Intelligence and even music.

FIGURE 9 RHYS P. HOVEY. (2009) SYNTH (PC) - GAME

### 3.6 - Procedural Content Generation: pros and cons

Although this method of algorithmic randomisation can be used on virtually anything inside the game universe (as well as other media production mechanisms), it is essential to understand both the advantages and downsides of such a method. While PCG is a method to generate content in real-time which still needs pre-determined data to generate other forms of content (this may include commands, 3D models or even database information) it is imperative to mention that this approach is not self-determining.

As PCG becomes an important and promising object of study, its downsides and advantages need to be taken into account prior its use by game designers and developers.

According to Ichiro Lamb (Gamasutra, 2012), the most important *advantages* of PCG are:

- Allowing game developers to produce content more quickly;

- Allowing game mechanics to behave in real-time in ways otherwise impossible;
- Reducing the on-disk/download footprint size of content as game content is dynamically generated in real time;
- Allowing a unique experience in each play session;
- Increasing game “re-playability” and consequently adding game value;
- Allowing game developers and game designers to be more creative through experimentation;

Potential *downsides* of PCG are:

- Increased game loading time – Generating large amounts of algorithmically randomised content requires longer loading time which the player may find tedious, thus weakening the game experience;
- Randomising elements inside a game may increase the need for player trial and error which can compromise player’s interest in the game title;
- Manual programming is generally more stable than algorithmic;
- Not all players like randomised content which may decrease the number of buyers of game titles which use such a method;

Here the need to bring innovative mechanisms of gameplay to mobile platforms makes the notion of what the advantages and downsides of PCG can bring intrinsic for game design and development. Therefore, a balance between both methods needs to be achieved during the game creation process. A game needs some form of constraint and using only algorithmically generated game content can be compared to a “*world without rules*”.

## **Conclusion**

This section discussed PCG as a game development method. The main differences between manual and algorithmic methods of content creation were also presented, as well as new prospects for creating games entirely algorithmically. In conclusion, while offerings many significant advantages, the

limitations of PCG when used within traditional game design are such that the majority of content creation is still done manually. A new approach to game design is required to take full advantage of the scope and flexibility that PCG offers.

In the next section customisation and personalisation will be defined in an attempt to make game designers more aware of their differences and how this difference can be successfully exploited and applied to game design and development.

## 4 - Game customisation versus game personalisation

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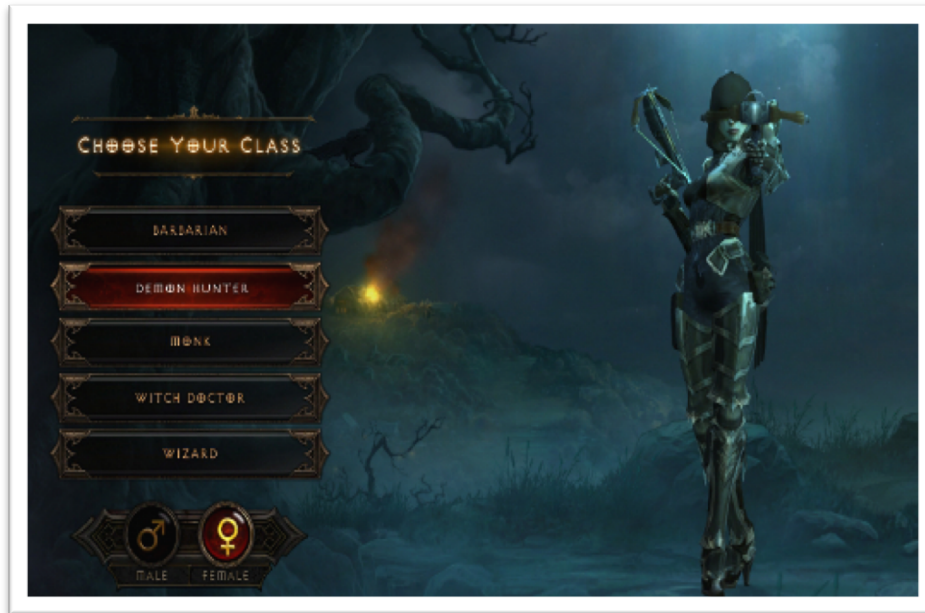
The debate between customisation and personalisation has been permeating the game community for years. In fact many game developers and even scholars do not clearly differentiate one from another, creating confusion around what the differences between each approach actually are.

*The concepts of personalization and customization lack a common, clear distinction. A frequently adopted distinction between the two terms is based on which party is active in the process of tailoring.* (Lee, 2011, p.28)

### 4.1 - Game customisation

Customisation is a process through which players are able to change some game elements according to their likes based on a series of pre-defined but limited libraries. These elements can range from character's appearance to a combination of user-driven changes in the game space. An example would be the possibility to change a character's class (warrior, thief, mage etc...) in an RPG game. The class of choice would allow subsequent character's changes such as appearance, "special power" and main weapons. A pre-defined library of in-game elements (which the player can choose to customise a character from) just gives a fractional number of possibilities therefore, making the game "semi-personal". In other words, customisation always comes with some constraints – the player can only choose from what is available. For this reason, customisation is never entirely free.

In conclusion Game customisation could be defined as **"I am in control of the game"**.



**Diablo 3** – A 2012 RPG game by Blizzard Entertainment, where customization does not go beyond class choice. Nonetheless the game sold 10 million copies worldwide. Apart from armor colors and in-game weapons (which players find by exploring dungeons and other environments), nothing can be customized. Characters are pre-determined from the very beginning of the game.

FIGURE 10 BLIZZARD ACTIVISION INC. (2012) DIABLO 3 (PC) - GAME

Although limited, customisation has for years been an effective way to engage players into the game storyline and gameplay, far more seamlessly than games which do not offer this feature. This process also may enhance “restricted” immersion by allowing limited individual preferences to be expressed inside the game realm. One of the downsides of customisation is the fact players need to “transmute” game elements in order to make the game more personal. Therefore, the sense of control is much more prevalent than the sense that players have an actual personal experience.

## 4.2 - Personalisation

With the idea of bringing players to a spectrum beyond customisation, personalisation is a feature which offers gamers far more engaging alternatives to bringing “pseudo-unlimited”<sup>8</sup> personal choices into the game experience.

***In-game personalization increases players' enjoyment, playing time, and game repurchase intentions.*** (Clavio, Eagleman, Kim & Kwak, 2010, p. 54).

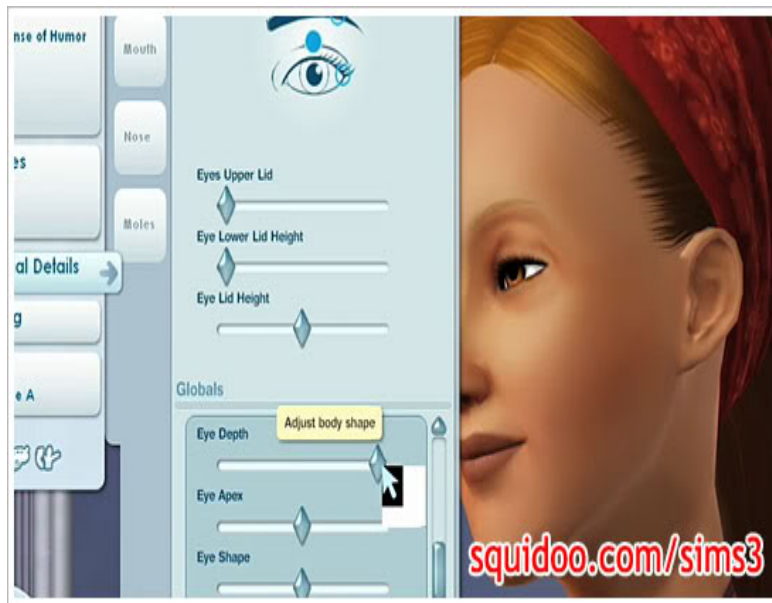
Personalisation is a feature in which players can customise a series of in-game elements *without* imposing constraints (or making the players think there is no clear limitation). Personalisation is a result of successful customisation. Personalisation provides the idea of being “part of a whole” to players, resulting in an experience deeper than simply “I am in control of the game”. Therefore, personalisation makes the game more visceral by allowing individual tailoring, as well as creating a sense that the player belongs to the game realm much more profoundly than through the customisation method.

Taking the previous example from an RPG game where players could first chose the characters class (warrior, thief or mage) and then choose the character’s appearance and apply customisation. In a personalisation approach there would be no *clear* limitation to features available to the player to choose from.

Personalisation could be defined as “I am part of a whole”.

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<sup>8</sup> “Pseudo-unlimited” describes a feature for which the game player feels that there is no limitation of possibilities for customizing a game element (as far as that particular element allows) but in fact there is...



Sims 3- A 2006 game from EA games allows players to perform detailed customization without imposing a pre-defined library of “looks” between which players may choose.

Here the idea of personalization is defined by an actual and individual approach which allows players to change the character’s appearance without apparent limitations (from the nose length to the eyebrow colour).

FIGURE 11 ELECTRONIC ARTS & MAXIS. (2008) SIMS 3 (PC) - GAME

The idea that players *feel* they are effectively changing the character’s appearance without limitations is one of the key components in which personalisation differs from customisation

#### 4.2.1 - Absolute Personalisation

Absolute Personalisation is a method through which players do not make much effort (or take no effort at all) to tailor game elements in order to feel part of the game as whole. Simple choices can allow the players to feel as much part of a game as a personal and holistic experience. Codemaster’s Race Driver: Grid (a 2008 drive arcade/simulation game) had an absolute personalisation feature – the game narrator would call you by your real name (or even nickname if that was your choice). Although Codemasters’s “audio name” feature provided a limited number of names and nicknames pre-recorded with the narrator’s voice, for those who had their name available in the database the sense of being part of the game as “real” characters, giving a new dimension to the game experience.

Absolute personalisation could be defined as “I am already part of a whole”.

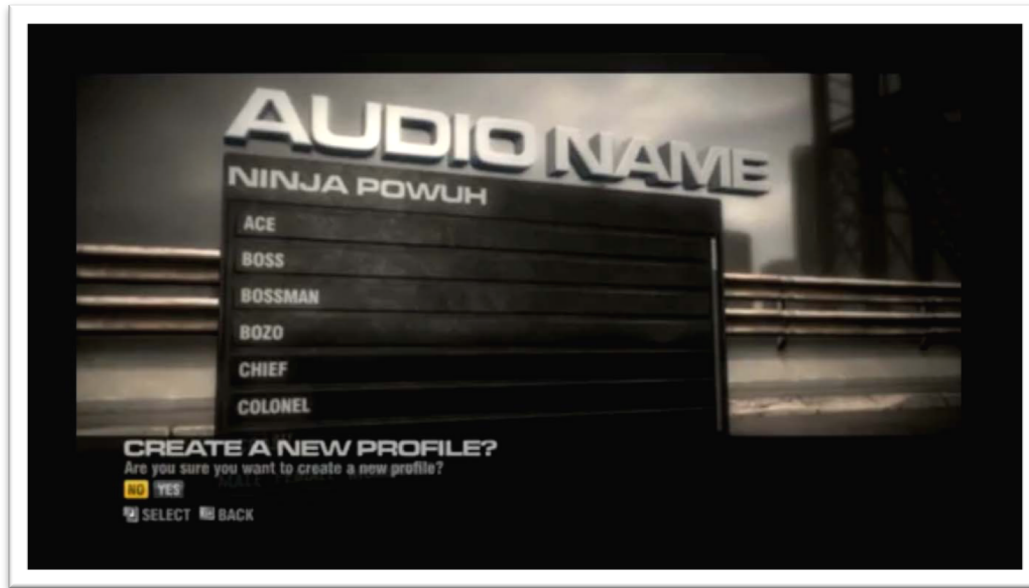


FIGURE 12 CODEMASTERS. (2008) RACE DRIVER: GRID (PC, PS3, XBOX 360) – GAME



**Away from Games -“We are part of the Coca-Cola brand”**

Coca Cola’s new social media-influenced campaign – “Share a coke with...” is an example of direct personalisation.

Coca cola drinkers feel part of a well-known brand when they see their names printed on a coke bottle label.

FIGURE 13 COCA COLA™ INC. (2012) “SHARE A COKE WITH...” RETRIEVED FROM WWW.COKE.CO.NZ

Race Driver: Grid **audio name** feature is an example of Absolute personalisation. This personalisation method was achieved not because it did

not have any sort of constraint (in fact it had – only the most common names were available in a pre-defined list of names), but for those who could find their names on the pre-defined name list they felt immediately part of the game as whole as soon as the narrator started to use their real names inside the game's narration.

Like in the Coca-Cola's campaign "Share a coke with..." (2012) Absolute Personalisation was achieved only for those who could find their names printed on the coke bottle and therefore felt part of a whole branding experience. Here the "pseudo-unlimited" feature was noticed by those who did not experience the direct personalisation process because of the lack of an element (their name) that connected to the proposed experience – to be part of a whole.

Absolute personalisation is straightforward, 'in-your-face', and does not require much effort to make something personal. Personalisation as an in-game feature does not always occur for all the players even if they play the same game title.

Prior to Race Driver: Grid one similar approach was called "input text name" where the players had to input their name before the game started. During subsequent on-screen text dialogue, the player's name would appear when other characters were engaged in any form of dialogue with them. At that point, the player's name would appear on the dialogue as a form to indicate the conversation was directed to the player's character inputted name. In an attempt to bring a sense of personalisation this feature was used extensively by RPG games in which customisation of characters was also a common feature.



FIGURE 14 [UNTITLED ILLUSTRATION OF FERN]. (N.D.) RPG MAKERS. RETRIEVED FROM [HTTP://MUGENEVOLUTION.CO.UK/FORUM/INDEX.PHP?TOPIC=755.0](http://mugenevolution.co.uk/forum/index.php?topic=755.0)

#### 4.2.2 - Incidental Personalisation

Incidental personalisation is a method through which players have to put some effort to feel part of a holistic game experience. In other words, they need to tailor characters, environments or other in-game elements in order to have a sense of immersion within the game realm. Personalisation “rules” still apply to this method (the player needs to feel there’s no limit or minimum constraint during the customisation process even if present). One example is Electronic Arts’ 2003 city builder SimCity 4. During the game, a series of gameplay options were presented which ranged from engaging players in a “god-mode” (design or deform pre-defined terrains for subsequent city developments) to a “mayor-mode” in which the game would effectively involve players in the city building process of the gameplay. Here the possibilities of creating a city from scratch would appear unlimited to players even though a limited number of buildings and terrains were available. Without imposing clear constraints during gameplay in an approach of “you can do whatever you want”, SimCity 4 provided a unique personalisation feature – user-driven environmental

creation. SimCity 4 became one of the most successful game titles to date. In this example Incidental Personalisation was one of the main features which made SimCity 4 a success.

Incidental personalisation could be defined as “I need to put some effort to be part of a whole”.

## 5 - First Person Games, Narrative and the Advent of Indie Games

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### 5.1 - Indie Games (Independent Games)

Independent games (also known as “indie games” which started to become popular from 2008) are games that are developed by one individual or a small group of game developers. They are called *independent* because they do not rely on big budgets provided by mainstream game publishers. Many indie games are based around satisfying mechanisms of gameplay (i.e. an easy way to control the game), unique game aesthetics (consistent colour pallet with unusual or retro visual effects) and innovative narrative structures (non-linear and experimental narratives compared to mainstream game titles).

***A discussion of the narrative potentials of games need not imply a privileging of storytelling over all the other possible things games can do, even if we might suggest that if game designers are going to tell stories, they should tell them well. In order to do that, game designers, who are most often schooled in computer science or graphic design, need to be re-schooled in the basic vocabulary of narrative theory.*** (Wardrip-Fruin, N., & Harrigan, P. 2003, p. 120).

Since their release in 2008, *Braid*, *World of Goo* and *Castle Crashers* (the first indie games to reach substantial worldwide success), brought a fresh approach to the game industry. These games are also the first ones to make gamers to realise the importance of a renewed approach in game design (McMillen, 2012), which is characterised by experimentation and innovation.

For many indie game developers, the democratisation of game development has an important role on the successful distribution of these kinds of games. This democratisation was driven by the dissemination of and easy access to

game creation software packs (game engines) throughout the game community.

Many of these Indie games are being ported to mobile devices, taking advantage of the unique features of these platforms such as touch-screen and accelerometer to enhance game experiences that were originally developed for consoles and the PC market.

## **5.2 - Game Narrative:**

In games, narrative works as a way to engage players into the gameplay process and as a “tool” to enhance game immersion. Narrative also works as way to draw players to respond to in-game stimuli, provide meaning to game events and provide a reason for specific game tasks, as well as increasing interaction within the game by placing players as active individuals (with power to change the story) or passive characters (where change in the storytelling process is not an option).

Narrative within games has become a major component of gameplay, even when the story is superficial. Some scholars argue that all games have some sort of narrative, while others defend the idea that narrative is non-existent, abstract, experimental (in some game titles) or may even be mistaken by individuals as the story construction of the game will change depending on how interactivity is represented and is subject to interpretation by players. Movies and books are unlike games in that the author gives the direction and the reader/watcher has no control over the storytelling.

***Interactivity is almost the opposite of narrative. Narrative flows under the direction of the authors, while interactivity depends on the player for motive power.*** (Adams, 1999, p. 118)

Jenkins (2007) defines spatial narrative as happenings (cultural, political and social ones) are shape by the game environment.

“Spatial narrative” employs the physical or the game space as a major component within the storytelling, and could be used as way to create diverse and truly individual responses from players while playing a game.

***Spatial or environmental storytelling creates the preconditions for an immersive narrative experience in at least one of four ways: spatial stories can evoke pre-existing narrative associations; they can provide a staging-ground where narrative events are enacted; they may embed narrative information within their “mise-en-scene”; or they provide resources for emergent narratives.*** (Jenkins, 2007, p. 124)

Although game narratives are subject to individual interpretation based on the player’s cultural and social background, not many games have explored the idea of personalised narratives. If game narratives enhance the game experience, personalised narratives could also potentially take game interaction to a new level.

### **5.3 - Diaries of a Traveller – A First Person Indie Game**

Although indie games explore innovative features within the gameplay, personalisation and customisation are two features that have not been deployed consistently in these games. Simple customisation (when used) is the most common method, while personalisation is not commonly explored at all. However, the idea of personalisation is slowly becoming an important feature within the indie game community. The idea of personalised narratives is a new feature that is having increasing relevance to game designers with the rise in popularity of social media networks.

Indistatik.com recently released a list of upcoming indie games for 2013 where many of future game titles will incorporate some personalisation method. Games such as *StarBound* by Chucklefish, *Cube World* by Wollay and *Path of Exile* by Gridding Gear Games are some examples of upcoming indie games

that boast features ranging from customisation through to incidental personalisation.

*Diaries of a Traveller* can be considered an indie game as it was developed by one person and with no financial assistance. The use of personalisation in the game is intended to create a more immersive experience without compromising enjoyment of the game. Another innovative aspect is the character's view – the first-person viewpoint is not commonly used in indie games (the third-person view to control a character is the most common).

The advent of the CD-ROM facilitated the evolution of first-person games from simple interactive narratives into complete and self-sufficient environments (with social, political and cultural characteristics) allowing movie-like storylines and complex gameplay. The combination of these features made first-person games one of the most popular genres among game players. Moreover, the personal effect that a first-person view allows is another important aspect of these games as there is no mediation between what the character sees and what the players sees.

***When the camera fuses with character body, the viewer sees exactly what the character sees, as if the camera “eye” were the same as the character “I”.*** (Galloway, 2006, p. 40)

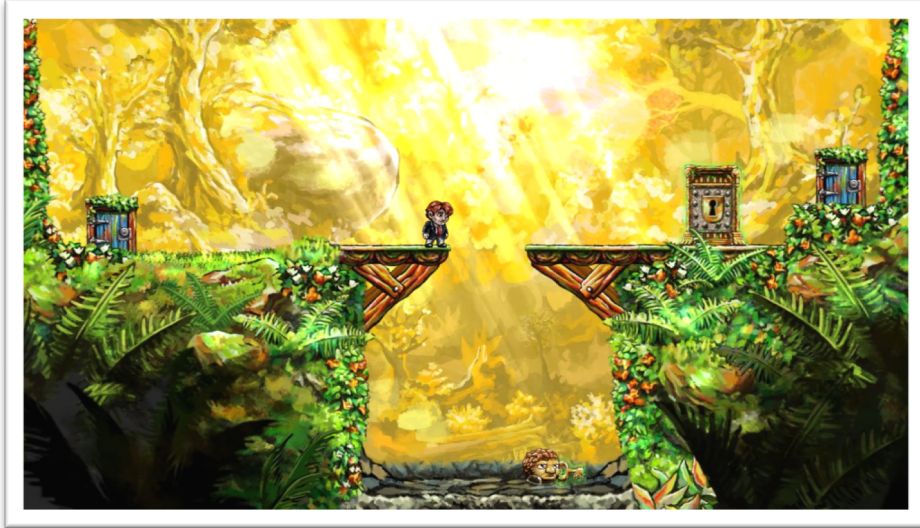


FIGURE 15 JONATHAN BLOW. (2008) BRAID (XBLA, WINDOWS, PS3 ) - GAME



FIGURE 16 2D BOY. (2008) WORLD OF GOO (XBLA, WINDOWS, LINUX, IOS, WIIWARE, ANDROID ) - GAME

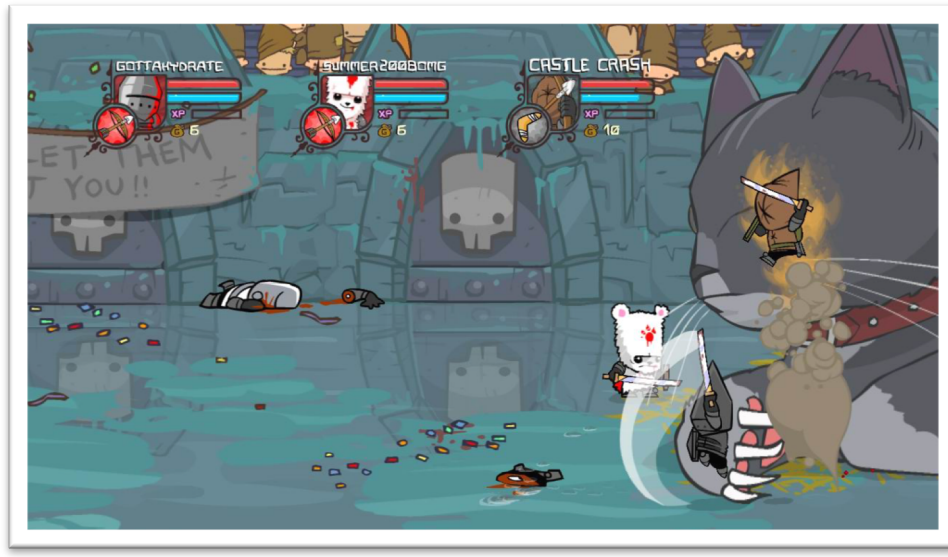


FIGURE 17 THE BEHEMOTH STUDIO, (2008) CASTLE CRASHERS (XBLA, WINDOWS PS3,) - GAME

#### 5.4 - Conclusion

In this chapter indie games were introduced as representing a fresh approach within the game industry. These games are mainly developed with no financial assistance from major game corporations and distributors. One could argue this lack of financial support has had the effect of reducing the number of game designers who aspire to mainstream popularity or significant profitability as the main purposes for creating games , leaving only those who are passionate about ‘the cause’ to populate the indie niche.

Also outlined in this chapter was the significance of narrative within games (regardless of whether narrative is overtly present within a game). Finally, the reason why the first-person view was chosen in this project was explained.

In the next chapter a short history of mobile games will be presented. The evolution of mobile games as a pervasive new phenomenon is explained and

discussed. Mobility, connectivity, and the emergence of a democratic market for mobile application development are also discussed.

In conclusion, the iPad's features can be explained as the reason for its popularity within the game community, as well as why it became a successful emergent game platform.

## 6 - Short Mobile Game History and the iPad

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### 6.1 - Tetris and Snakes

Although with its release in 1983 the DynaTAC 8000X was the first commercially available mobile phone, it was only since 1994 that games first became available for mobile devices. *Tetris*, a 1984 game developed by Alexey Pajitnov was originally a PC game which was later ported to a mobile device. Hagenuk MT-2000 in 1994 was the first mobile device ever to embed a game (*Tetris*) within its operational system. This shift from positioning mobile devices as gadgets solely dedicated to communication to the modern expectation of complex devices capable of presenting a variety of other functions (such as calendar, personal agenda and music player) was one of the first steps to establishing them as recognizable game platforms.

Despite *Tetris* being the first game ever available on mobile phone it was with *Snakes* that the popularity of games for mobile devices reached another level.

*Snakes* – A mobile version of late 1970's game became one the most played mobile game titles worldwide. In 1997, Nokia's 6110 model was the first device which shipped *Snakes* embedded into its operational system. 350 million devices were shipped with *Snakes*, making it one of the most globally recognised games.

The success of *Snakes* was so vast that variations of *Snakes* still now found in modern mobile devices such as the iPhone and handheld consoles, and even embedded in popular websites such as Google and YouTube. *Snakes'* popularity helped mobile gaming to become a popular culture among cell phone owners.

Although popular, *Snakes* had no personalisation option. Its gameplay relied on simplistic mechanics in which the player needed to press specific keys on the mobile phone in order to control the character (a snake). At that stage, the

simplistic gameplay and design interface was a direct consequence of the limited number of colours available on mobile device displays (mobile phones had monochromatic screens) as well as minimal hardware power.



FIGURE 18 NOKIA INC. (1997). NOKIA 6110. RETRIEVED FROM [HTTP://WWW.XTIMELINE.COM/EVT/VIEW.ASPX?ID=25507](http://www.xtimeline.com/EVT/VIEW.ASPX?ID=25507)

## 6.2 - Enhanced multimedia and Connectivity

It was in the mid 2000's that the smartphone era started to take its current form. By the mid 2000's the market was flooded with new mobile devices – each one portraying strong features and enhanced technologies in comparison to other models. It was the beginning of the Smartphone Era. This drove a constant war between brands to increase their market saturation. Despite continuous technological mobile development among devices, and the introduction of multimedia functions such as limited Internet access (allowed by CDMA and GSM technologies) and the ability to play music and videos straight from mobile devices, it was only with the establishment of the

3G network (a data optimized telecommunication technology also known as Tri Band) that mobile devices truly introduced advanced multimedia capabilities. The most common applications not previously available on mobile devices that were allowed by the larger bandwidth telecommunication of 3G technology include: enhanced mobile Internet access (compared to CDMA and GSM technologies) Video on Demand, Video Conference, Location-Based Services and Global Positioning System (GPS).

Some of these features started to be infused in game design on mobile platforms allowing games to become more complex and more engaging to their players. These new features were the driving force for experimenting new game mechanics, interface design and new playability methods on mobile devices which were not then possible on consoles or PCs. Some of examples are GPS as in-game feature, mobility as a way to extend the game space into the physical and later the possibility of playing a game with an alternative input method – the touch-screen.

Wi-Fi connectivity was another important feature for the disseminations of mobile games. Wi-Fi allowed mobile owners to download games on their phones without the need of a computer making the process much more seamless compared to devices which Wi-Fi was not an option. Wi-Fi also diminished the need for mobile user to be constantly in front a home computer in order to accomplish a variety tasks via internet. Social media networks for example could be accessed via Wi-Fi making the emergency of social media mobile games a direct consequence of the widespread of Wi-Fi connectivity on mobile devices.



God of War – Betrayal Is one the first console games to have an exclusive version released for mobile devices.

The direct result of mobile devices as emergent game platforms allowed existing console games which were familiar to players to be released on those devices.

FIGURE 19 SONY PICTURES DIGITAL (2007) GOD OF WAR BETRAYAL – (MOBILE JAVA) – GAME

### 6.3 - Mobile Apps – Games as the most popular app category

The possibility of adding subsequent programs extended the usability<sup>9</sup> of a mobile phone. Devices that once were shipped with built-in applications without the possibility of changing its “factory” status shifted towards a model in which users could customise/personalise the device with tools that would serve their needs. Prior to the iPhone release, just a handful of mobile devices available on the market allowed full applications to be installed. This feature came as consequence of a Wi-Fi enabled devices and the strong dissemination of GSM network around the globe. GSM network allowed increased bandwidth compared to the previous generation (CDMA). Mobile capabilities were expanded via wireless network as well as making them much more comfortable with a larger number of possibilities. It’s important to mention that the first “apps” available as a form of downloadable content were

<sup>9</sup> NOKIA had already added such a feature in some models long before the release of the iPhone but with an undemocratic policy and huge bureaucracy

games. Nokia for example, (one of the first mobile companies to allow downloadable content into mobile devices) increased its revenue dramatically by introducing games in local carrier's virtual store, making games along with ringtones the most profitable downloadable content for a long period of time.

As a result a never-seen number of mobile games were released in a short period of time allowing experimentation and consequently original game mechanics to be one of the most important aspects of mobile games. (Morgan, 2011)

#### **6.4 - Social Media Mobile Games and new game players**

The constant growth of social media as a pervasive mass culture phenomenon has evolved alongside the adoption of mobile devices as a game platform by new users. Many of those users had never before experienced an electronic game. Social media games have become important instruments for introducing games to a new wave of players. The fact that a game could be available anytime, anywhere (like access to social media networks) made many users much more comfortable with a smartphones and tablets. People that had never previously used a mobile device started to use it as entertainment tool to amuse themselves during short periods of down time such as waiting for public transport.

This on-going evolution allowed the notion of multiplayer games to become a way to drive a fresh audience of players (mainly new and inexperienced ones) into the arms of game developers, who used new gamers' naïve behaviour as a way to make profit. Social media gaming for new game players can be compared to arcade game players – you will never win unless you keep inserting new coins. If you have enough knowledge to spend just a few coins it means you have already spent a considerable amount of money on that game.

Currently, game developers are increasingly using social media as a strong mechanism to not only enhance a specific gameplay mechanisms and provide personalised experiences (for example via Facebook and Twitter) but also bring a new wave of game players into an arcade gaming paradigm – one which brings fulfilment and pleasure with each accomplishment and also brings revenue to the game developer.

### 6.5 - The iPad as an emergent game platform

The success of the iPad is without any doubt a direct consequence of iPhone's popularity. According to Stephanie Morgan (2011), the "app store" has allowed a wide-open market for independent and third-party game titles which rely heavily on the iPhone's technology to bring 'fresh air' to the game market via innovative gameplay. This transition in mobile game distribution has had a positive impact on the iPad, as a large number of existent iPhone games were later ported to the iPad. Unlike traditional consoles which usually reach the market with a small selection of available game titles, the iPad was launched with large number of game titles ready for play, which was great contributor towards its emergence as a new and successful game platform.



FIGURE 20 APPLE INC. (2011) IPAD 2 AD – *HOW GAMES SHOULD BE PLAYED*. RETRIEVED FROM

WWW.APPLE.CO.NZ

The iPad's popularity and its rapid growth as a game platform are also linked to a series of features, some of which are direct descendent from the iPhone. These features include:

- A multi-touch screen which takes up 90% of the device's front side – the screen as the central piece of the operational system allows games to provide a much more immersive experience compared to a small screen with key or peripheral controls on mobile devices.
- The integration of movement sensors and proximity detectors started to be used as strong game mechanics for iPad games, primarily driven by the sense of control which is enabled by its large screen. These features become much more omnipresent than on smaller devices such as the iPhone for example as the device's size allows more control and better visual feedback.
- Desktop-like web browsing capability has allowed PC, console and social media games (powered by web browsers) to become very popular on the iPad as it provides a seamless transition from one platform to the other for players who are used to playing games on desktop computers with large screens.
- A virtual keyboard with multi-language support was another important feature that diminished the need for external peripheral controls (usually a physical keyboard). Many games use a variety of input methods (some of them rely on the keyboard to input character's name or respond to other dialogue options within the game). Social media integration in some game titles also made the virtual keyboard an important feature as it allows players to communicate with other players

by sending instant messages with the virtual keyboard without the need to leave the game.

With the rise of games as the most popular category on Apple's app store, since its release the iPad has become a perfect device for gamers (148apps.biz, 2012). The possibility of choosing from a constantly growing library and playing mobile games on a larger screen become an important attractive to gamers who craved engagement with a deeper game experience. Apart from the telecommunication capabilities, the iPad has all the iPhone's features – a result of sharing the same operational system, the IOS. Moreover, the iPad's touch-screen input could be used in comfortable way without imposing visual constraints in comparison with games played on the iPhone. Within 18 months of its release, the iPad became the fastest growing game platform for many mainstream game developers. Electronic Arts (a giant game development company) cited new media and the advent of game integration with social media as one of the main factors that drove the iPad to become a device that rapidly conquered the status of an emergent game platform in 2011 (thenextweb.com, 2011).



FIGURE 21 APPLE INC. (2012) THE NEW IPAD AD. RETRIEVED FROM WWW.APPLE.CO.NZ

## 6.6 – Conclusion

This chapter presented a basic introduction to mobile game history. This brief introduction was aimed to demonstrate how mobile games became successful on emergent platforms in a short period of time. The persistent hardware improvement was a direct consequence of continuous competition between mobile phone manufacturers, allowing high-end games to be developed on those platforms. Mobile phone users were the beneficiaries of this competition, which consequently had a direct impact on how mobile games became so popular. The iPad as a successful emergent game platform was also discussed, explaining how it is a direct consequence of mobile devices popularity (primarily the iPhone).

The next chapter will discuss new media as a new phenomenon which is allowing the democratisation of game design and development. The concepts of mobility and space will be discussed in a deeper way as an important element for game design.

## 7 - The New Media – information, space and mobility

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### 7.1 - New Media

As we witness the rapid growth of new web and mobile technologies, we see the on-going rise of 'new media' – a “new approach” to produce content heavily based on computer-mediated communication and other emergent technologies. New media firmly established its place in our contemporary society driven by a background of social, cultural and technological changes which are deeply connected to a constant process of globalization, as well as the shift from modern to post-modern society.

***Parallel to the shifting notion of 'new media', gaming, as an art form, has evolved to encompass both interactive and non-interactive genres. Indeed, much of game art precariously straddles the two worlds of new media and contemporary art, occupying a satellite discourse that has the capacity to critique and challenge both worlds. In a period marked by convergence, gaming has merged with, and informed, networked social media.*** (Hjorth, 2011, p.31)

The way we perceive communication has changed, resulting in new ways to distribute and consume information. Once driven by conservative media production channels, (where publishing facilities carried ownership of both the message and the medium) *information* shifted towards a more democratic and collective model. New electronic technologies such as blogs, video-sharing websites, social media networks and collaborative websites like Wikipedia.com are now used as tools to produce or catalogue information in a model much closer to cooperative journalism<sup>10</sup>. Provided you own a computer

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<sup>10</sup> It is important to mention here than when I use the word “journalism” I tend to use it as a way to report general events (whether political, economic or even personal). My idea of journalism here is simply the *intention to inform* (whether to a whole

or a mobile device connected to the Internet, you have access to constant information as well as the power to “create” informative, critical or even “inadequate” content to your heart’s content.

Blossom, (2009) believes every time someone uses technology to create information or catalogue experiences (which can be shared with others in any direct or indirect form), the user can then be considered a “publisher”.

***“(...) not everything that we publish has a huge audience or seems to be very important, but if others find what you’ve published to be valuable, then you’ve achieved what every publisher in the world tries to achieve”***  
(Blossom, 2009).

One of most interesting aspects of “New Media” is the shift away from a market which separates users from professionals. With the advent of new technologies and the personal computer as a mediator to create media, users have started to engage in the process of content creation. Some pieces of software are aimed at both professionals and amateurs, for instance photo editing tools, 3D software and video editing applications. This has facilitated an unprecedented democratisation of knowledge and content creation.

The same shift has occurred across the game spectrum. Now game players are able to create their own games. Game engines like Unity 3D and other open source tools are available free of charge, allowing gamers to engage with this change. Although this shift is not a new phenomenon (the game mod culture is been out there for some time), the past few years were crucial for establishing this change, which now reflects a collaborative model where gamers use forums and social media to learn game design and game development.

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nation or just a selected group of people). I do not necessarily embrace the idea of traditional “conservative” journalism (the one which you read in the newspapers or watch on the 6:00 news report

## 7.2 - UGC - user generated content

A new appreciation of user-generated content has become the power which drives users to keep publishing content. In contrast to traditional publications, for some individuals publishing and disclosing information about the “self” can be more satisfying than any form of financial reward (Tamir and Mitchel, 2012).

Today, a single Internet post on a blog or Wiki website can be shared instantly and viewed by millions of people – an indication that we are now part of a gigantic online community. As a consequence we are experiencing a change in the value of information which is now much more personal than in previous centuries; for example, you can choose what to read, what to watch and at what time it is conveyed to you.

### Social Media Landscape



FIGURE 22 [UNTITLED ILLUSTRATION OF FERN]. (N.D.). RETRIEVED FROM WWW.FREDCAVAZZA.NET

***“In the process of becoming publishers who can reach and interact with a potentially global audience whenever they (users) need to or want to, something is changing in the way that everyday people look at themselves and their world.”*** (Blossom, 2009, p. 41)

### **7.3 - Social Media Networks and the Emergency of Social Media Games**

Social media games are a new phenomenon in the game industry. These games are played via social networks and generally include some multiplayer gameplay. As for social media networks, they heavily on social interaction which allows players to progress within the game narrative or gameplay. Personalisation of these games is primarily achieved via social networks in which the game is primarily connected. Some games like *Farmville* (a 2009 farm simulation game developed by Zynga Inc.) offers a series of personalisation and customisation features. Farms are largely customisable without many obvious limitations, allowing “incidental personalisation” to be achieved within the game. The player’s real name as well as other personal information is retrieved straight from the player’s Facebook account, providing a form of “Absolute Personalisation” as a game feature. *Farmville* also features a function that enables the player to allow only Facebook friends who also play the game to visit their farms and interact with the player by sharing, trading or selling items. This feature works as an Absolute Personalisation mechanism, as players share and play in game space only with known friends. Absolute Personalisation is achieved because no effort by the player’s end is necessary for this feature to be used in the game.

## 7.4 –Conclusion

User Generated Content (UGC) has become an important component of games as game designers and game developers start to realise its importance as potential tool for enhancing the game experience. The proliferation of personal information via social media network channels has slowly been used as a mechanism for personalising experiences across a variety of platforms including websites, single player games, multiplayer games, internet forums and online services.

This section also presented the popular social media game *Farmville* as a demonstration of how social media game features are becoming important elements for a game's success.

In the next section some concepts regarding the development of *Diaries of Traveller* as game prototype will be presented.

## 8 - Diaries of a Traveller:

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### 8.1 - An introduction

This game design project uses UNITY 3D for its game engine. The methods of personalisation applied (including plugins and programming approaches) uses Unity 3D exclusively as the primary game design software. Consequently some elements regarding game methods suggested here are only available for experimentation inside UNITY 3D.

*Diaries of a Traveller* uses a series of mechanisms of personalisation in order to enhance the game experience at a personal level. Players' social media informational well as their physical location data are used as a way to provide a personalised game experience. Moreover, through the use of PCG some elements can be potentially randomised in order to provide a unique experience each time the game is restarted or replayed.

Social media networks such as Facebook and Twitter have become important features for the Web 2.0 generation, and may be used as a method to incorporate personal data into a game's behind-the-scenes programming. As such, the retrieval of personal information into gameplay is one feature that could potentially improve the overall game experience by providing individual experiences.

One of the methods this project explored is the idea that personal data retrieved from Facebook could be seamlessly incorporated into the game narrative. This feature would allow gamers to perceive the game environment with the inclusion of familiar elements while the PCG (dynamically generated data) method would apply that information in real-time as well as randomising some game elements. Photos, Facebook posts and the user's events, as well

as other content generated inside that particular social media website could be used as a bridge between the virtual and physical environments.

These sources of personal information could potentially be dynamically introduced into the game narrative in order to provide a personalised experience.

## **8.2 - Designing the Game:**

This MDes project aimed to investigate theoretically how new mechanisms of personalisation and customisation could enhance the game experience. The investigation was aimed primarily as a proof of concept which will theoretically allow game developers with programming knowledge to effectively use this research conclusions as a way to apply these research conclusions into a game design.

Therefore, the majority of features here investigated were not properly integrated into the final game as it would require a higher level of expertise. Nonetheless they are presented as a mock-up

## **8.3 - Why Unity 3D?**

Unity 3D is a game engine which allows game deployment on variety of platforms. At the present moment, Unity allows games to run on iOS, Windows, Mac, Android, Flash, Web Browser and Linux.

One of the main reasons this MDes project uses Unity 3D as a game engine is its popularity among hobbyists and aspiring game developers, as well as the possibility of a game being deployed across a large range of game devices. Unity is one of the few game engines which provide a completely free version

without requesting a share of revenues for any published game – even if the game title becomes a success.

With this approach of making game creation an available to everyone willing to engage into game development, Unity has become the most popular game engine within the game community. Another interesting point regarding Unity is the importance its user community has placed on sharing information about the design and development of games. The enthusiastic and growing community exposes how collaboration has become an important feature for independent game development. Whether for fun or profit, the game developer 'candidates' are changing the game scenario.

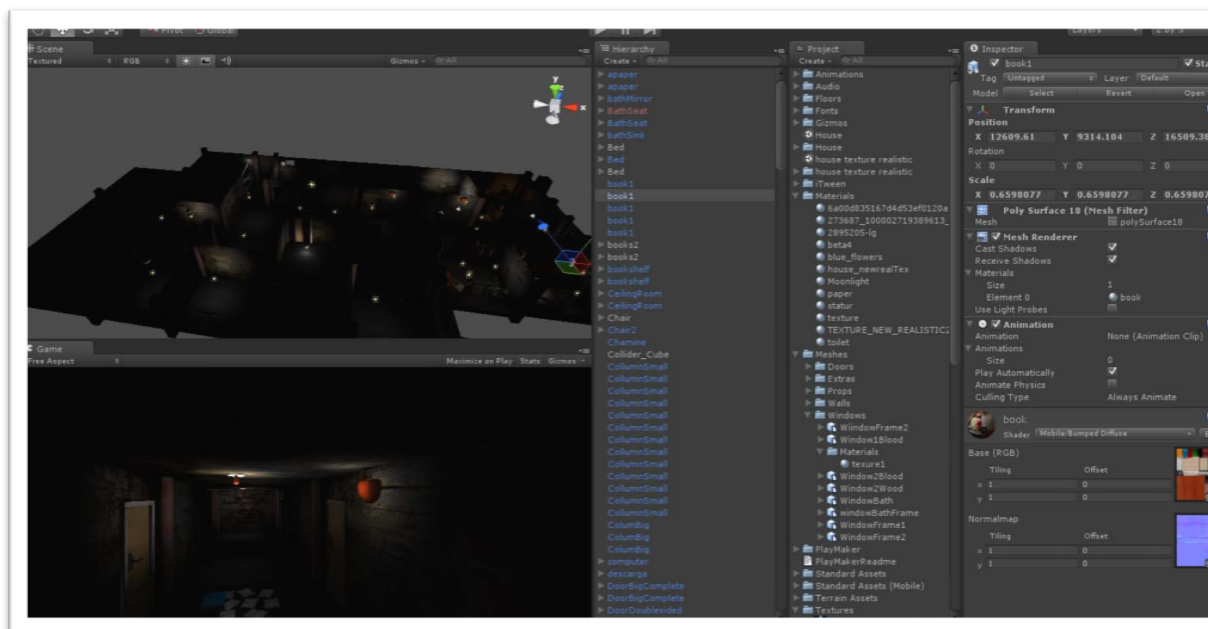


FIGURE 23 UNITY INC. (2012) – “THE HORROR HOUSE PROJECT” BEING DEVELOPED INSIDE THE GAME ENGINE (UNITY 3D) ENVIRONMENT

The shift within the game scenario which allows players to become game developers was an intrinsic point for this project. Gamers are now able to develop their own games (an important process that happened in the “New Media” which Martin Lister defines as “consumption meets production”). Unity

3D provides a free version which allows game development to become more and more democratic.

***Across a range of media we have seen the development of a market for 'prosumer' technologies; that is, technologies that are aimed at neither the professional nor the (amateur) consumer market but both – technologies that enable the user to be both consumer and producer.***  
(Lister, 2009, p. 33)

#### **8.4 - Unity Experiments**

During the beginning of this MDes project the basics of game development inside Unity was investigated. The first experiment was to create a simple horror game. 3D models were developed with Autodesk Maya and basic interaction was added. The first person view was intended to create a more personal level of interaction (the lack of a character as a mediator between the player and the game provides a more immersive experience compared with third person games).

The idea here was primary to embrace the new wave of game developers (the ones who do not have any game development experience). This aspect of this research became very important to understand how this new phenomenon happens on the user side (as many gamers which were primarily game players started to engage into the process of game development whether as hobbyist or aspirant professional game designers/ developers).

The main goal of the game was to find keys to open locked doors and explore the environment. The 'gruesome' environment combined with atmospheric music and sound effects provided a unique game experience where the psychological aspect was taken as an important component for engaging players into the gameplay. The plot was not necessarily clear as the idea was

more concerned with understanding how a game engine worked than actually creating a complete game.



FIGURE 24 DOS SANTOS (2012) THE HORROR HOUSE (PC, IPAD) - GAME

This first experiment was primarily to explore the idea of how designers can embrace game development with minimal or even no knowledge, thus mimicking the new wave of game developers – the ones that were once gamers and now want to create their own games. The majority of knowledge gained during this process was acquired by engaging in conversations from game development forums as well as getting help from online strangers who provided pre-defined codes to develop the first experiment. This notion of “helping someone that I don’t know personally” is an amazing contributor that is helping game development democratisation among new developers. Here

the role of the researcher as a person who engages into the “transformation” became an important feature for this research.

**Note from the Author:**

For the very first time gamers are able to become game developers and game designers. The argument between whether a game designer or game developer needs academic or “official” knowledge to be recognized as such is not discussed in this study. The most satisfying aspect of this whole change is to recognize that gamers do not need to proselytize their thoughts of what games should be in community game forums. They now have the opportunity to make their own games.

“Horror House” was the first attempt to not only embrace game development by a game player who had no game programming knowledge whatsoever, but as an investigation by a researcher who wanted to be part of the current paradigm shift in gaming.

From the very beginning, this project aimed to embrace this new wave phenomenon of aspiring game developers and hobbyists – and I wanted to be part of this ongoing transformation. As Larissa Hjorth (2009) points out in her book *“Games and gaming – an introduction to new media”* game researchers need to engage in a participatory investigation method if expecting to understand games and gamers in an effective way. Here I am – engaging in this process because I am not just a researcher, a designer, or consumer – most importantly I am a game player and I love it!



FIGURE 25 DOS SANTOS (2012) THE HORROR HOUSE (PC, IPAD) - GAME

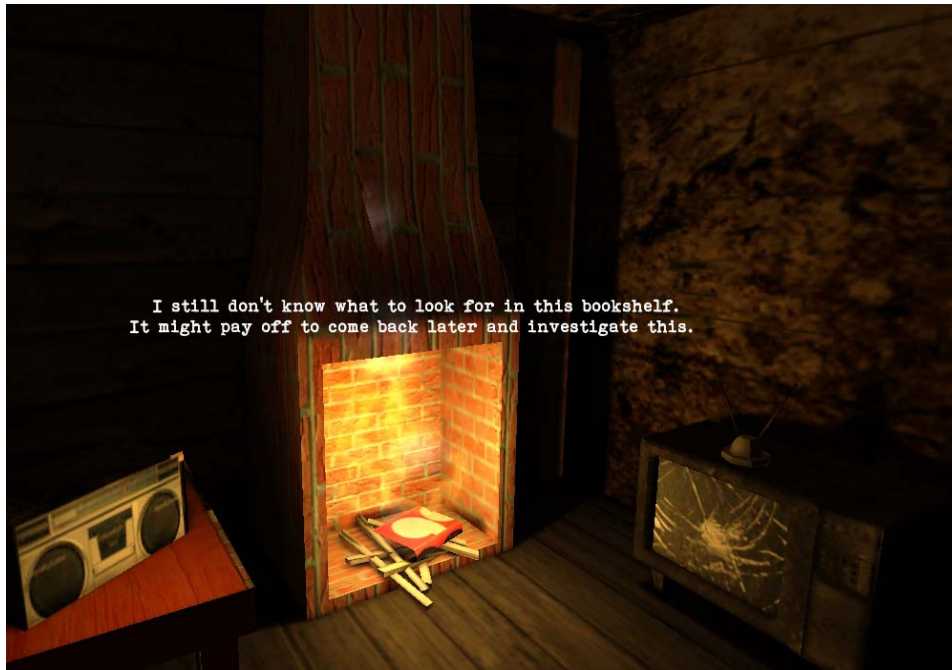


Figure 26 Dos Santos (2012) The Horror House (PC, Ipad) - Game

### **8.5 - Theoretical approach: Using PCG (dynamically generated content) to randomise the game texture and environment elements**

The second process during the investigation of how Unity 3D worked was to perceive the game house in different ways. While still the same environment, textures would be used from three pre-defined JPEG files – “clean” house, “under water” and “colourful”. The idea was that PCG would be used to randomise the textures of the environment as well as add some elements that would simply be rendered in specific game scenario. Each time the player restarted the game, PCG would generate one of the three pre-defined textures and apply one of them into the house.

Such an approach would allow a unique player experience each time the game was restarted. As consequence, the perception of space would also be “reconstructed” each time the game was played. This investigation was quite important in the sense which drove this MDes to start investigating the relationship between virtual and physical space in relation to the game-player.

### 8.5.1 Clean House



Figure 27 Dos Santos (2012) The Clean House (PC, Ipad) - Game



Here the house would be generated with a realistic texture where furniture and other elements would be added to the environment during the game “load” process.

FIGURE 28 DOS SANTOS (2012) THE HORROR HOUSE (PC, IPAD) - GAME

### 8.5.2 - Under-Water House

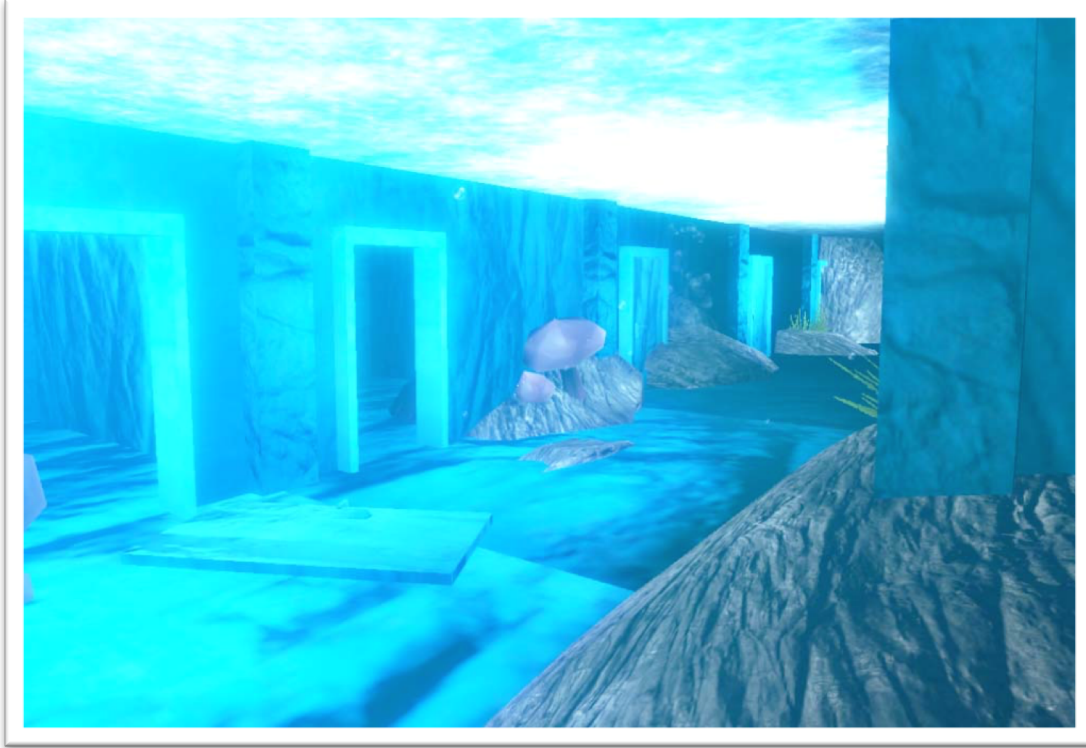
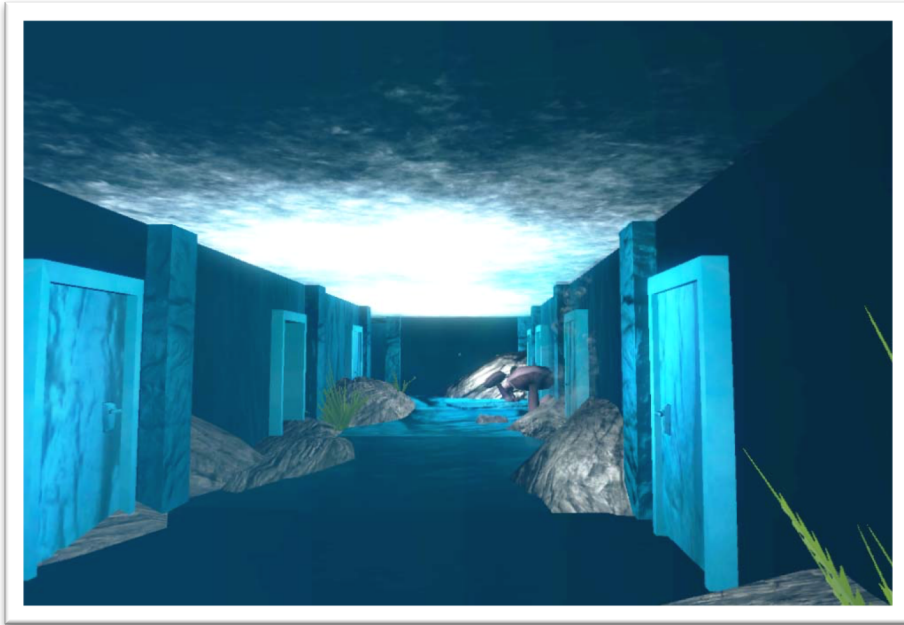


FIGURE 29 DOS SANTOS (2012) THE UNDER-WATER HOUSE (PC, IPAD) – GAME



Here the Horror House was “converted” into an aquarium. Some elements like stones, water bubbles, water stream and plants would be placed randomly using PCG.

Movement was quite restricted so as to mimic underwater movement.

FIGURE 30 DOS SANTOS (2012) THE HORROR HOUSE (PC, IPAD) - GAME

### 8.5.3 - Colourful House



FIGURE 31 DOS SANTOS (2012) THE COLOURFUL HOUSE (PC, IPAD) – GAME



FIGURE 32 DOS SANTOS (2012) THE COLOURFUL HOUSE (PC, IPAD) – GAME

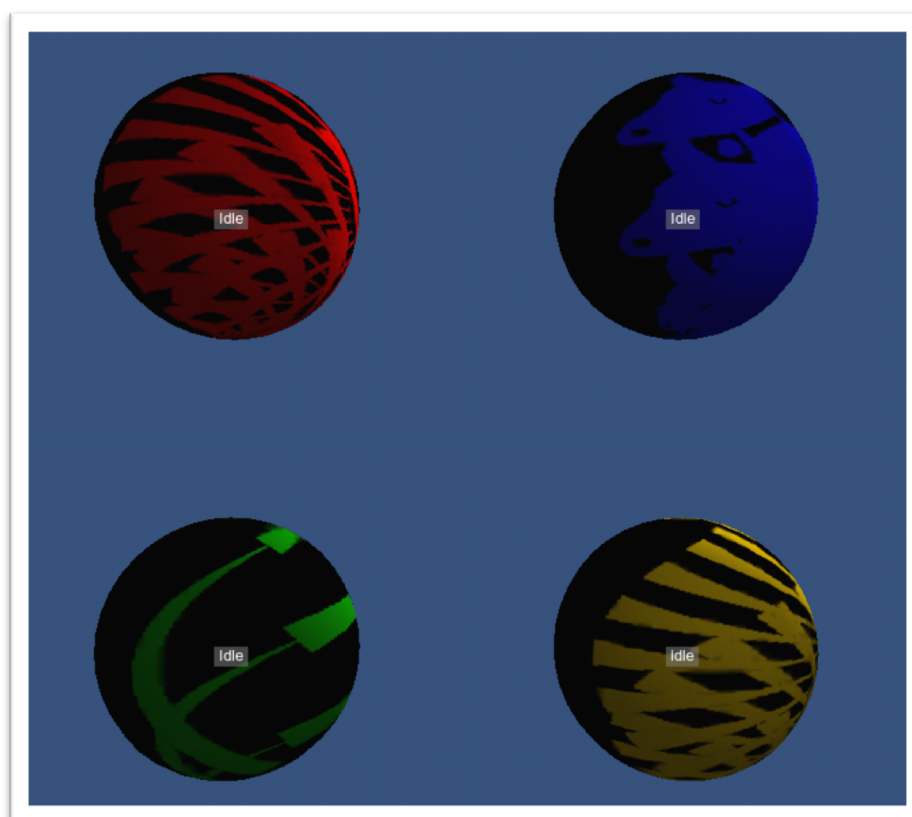
### 8.6 - Conclusion:

This approach of randomising a pre-defined number of textures to apply to the environments as well as inserting new elements into the game could potentially create a new perception of the same space each time players play the game. Narrative would be enhanced, gameplay mechanics would become more engaging and the sense of immersion would be more profound. While PCG would not generate those elements on its own (the elements are pre-defined) its role would be to apply them randomly, minimizing the need to manually create those environments by the game developer.

Here personalisation would not directly be linked by players' choice but a result of their own interpretation of "one" space which would always change. Allowing individual perception is a first step to providing personalised experiences.

## 8.7 -Touch-Screen as an input method

The first experiments using Unity 3D were primarily conducted on a PC. Although the first version of the “Horror House” was successfully ported to the iPad platform, the subsequent investigations were tested on a PC computer. During this time, the investigation primarily focused on methods for interacting with in-game objects using the iPad’s touch screen. Results of these experiments are detailed below:



During this experiment four 3D spheres were created using Unity. The idea was to make each sphere to respond differently to finger-touch on the iPad screen.

Red: shakes and changes size on touch;

Blue: Rotates on the X-axis on touch and hold; stops rotating on finger release;

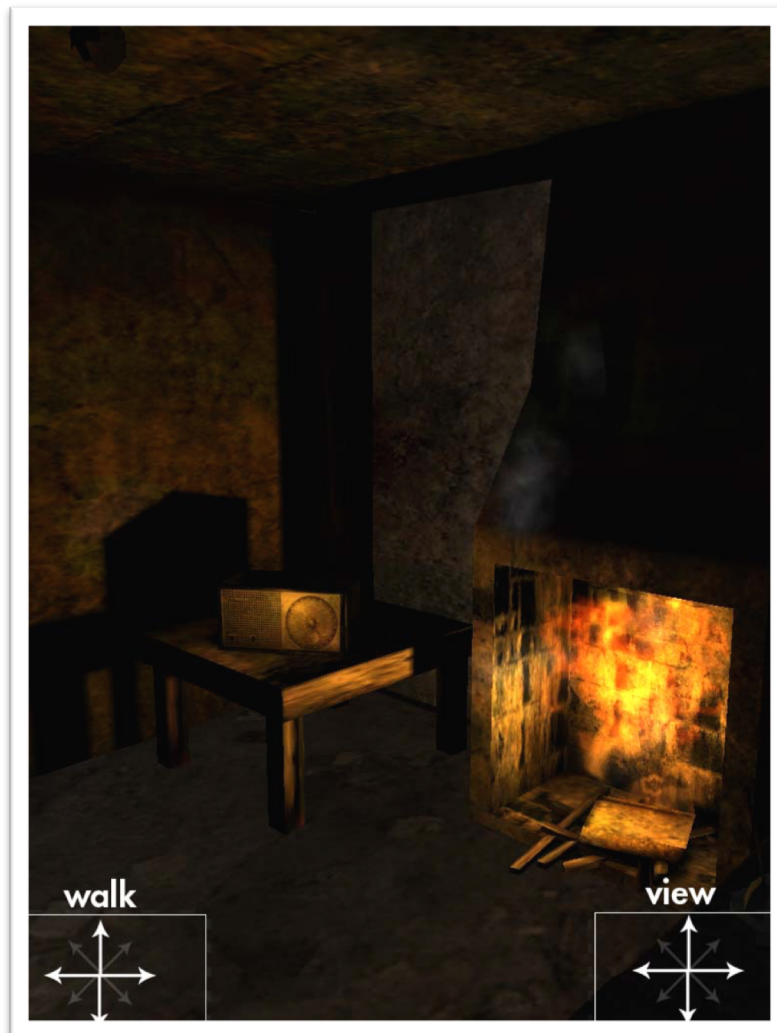
Green: Turns the screen dark on touch, turns the screen back to normal on release;

Yellow: changes the sphere texture on touch and hold.

FIGURE 33 DOS SANTOS (2012) FIRST TOUCH-SCREEN EXPERIMENT – THE SPHERES (IPAD) – GAME

### 8.7.1 - Touch-screen for expressive in-game commands

After experimenting with different touch-screen behaviours, I concluded that the touch screen is an effective input method to control a game character. The Horror House game was used for this experiment. Unity's standard touch-screen script was used to change the character's view as well as walking and jumping commands. Unity's script was slightly altered to accommodate the Horror House game experiment on the iPad.

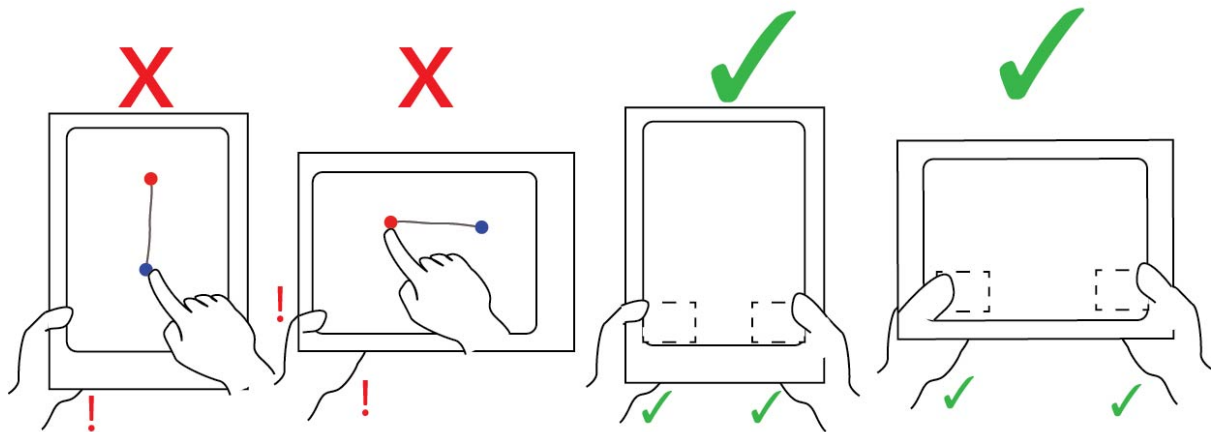


During this stage the touch-screen became the main element of the game experiments.

Different input methods were investigated –swiping and tapping the screen were two of the finger-gestures that were incorporated into the game via a Unity plugin (finger gesture plugin by William Ravaine).

Although successful, it did not work in the sense that it was hard to use those commands while still holding the iPad. The physicality of the device made the on-screen “semi joystick” the best option.

FIGURE 34 DOS SANTOS (2012) TOUCH-SCREEN IN THE HORROR HOUSE (IPAD) - GAME



At first, it was concluded the screen orientation was crucial to decide which input method would be the most practical. After investigation, was concluded that in order to make players more comfortable with the game is up to them to choose which screen orientation they want to play with.

By “emulating” a joystick in both extreme sides of the screen, any orientation could be chosen by players without making the input-method uncomfortable.

FIGURE 35 DOS SANTOS (2012) TOUCH-SCREEN ILLUSTRATION

Portrait orientation is a new feature in gaming which breaks the convention that games should be played in the landscape format. Heavily influenced by movies, the game industry used this layout for years until smartphones and tablets reached the market, allowing developers to rethink the screen orientation for games and user driven-content such as personal footage.

Screen orientation choice is one of the first features that make a mobile game more personal. In other words, the player chooses which orientation is the best one according to his or her perception.

***As an audio-visual medium, video games share some common ground with film when it comes to visual and sound design. Shared features such as camera angles, framing and composition, camera movements, lighting, sound, and optical effects are used in creating cohesion,***

*through specific points of view, between the player and the digital spaces and worlds explored in games. Video games also exploit elements of mise-en-scène in terms of the arrangement and movement of figures in game space, as well as editing patterns to establish spatial, temporal, and rhythmic relations.* (Perron & Wolf, 2009)

## **8.8 - Conclusion:**

While the input-method experiment was an essential way to investigate the use of touch-screen as a new method for playing games (primarily a result of the popularity of touch-screen-enabled smartphones and tablets) one interesting point concluded was the fact that the screen orientation had an important role to play in how players were able to perform some finger-gesture actions. The iPad for instance has a larger screen size compared to the iPhone which made the screen orientation choice much less practical in some game genres (compared to the same titles released on the iPhone). In the first person genre, either the portrait or landscape orientation could be used when a joystick was emulated on the touch-screen device or by using portions of the screen as a mechanism to control the game character.

Another personalisation mechanism is how game developers face screen orientation as a method to provide an individual and comfortable way to play a game. The auto-rotation screen feature on the iPad would make the screen adaptable to the player's choice.

Here personalisation can be achieved by allowing the orientation to be freely chosen by the player. Forcing a screen orientation needs to be meaningful for the game, for example using the front camera, or increasing interaction constraints. Many games do not take this into consideration, making the screen orientation much more of a development "choice" (following

conventions like using the landscape mode) than a meaningful one for players.

### 8.9 - Camera experiments:

As the screen orientation was defined and the touch-screen joystick proved to be a comfortable input method, it was time to see how the iPad front camera could be incorporated into the gameplay. Investigating the camera capabilities inside Unity was an effective way to see if there was any possibility of projecting the player's own face inside the game. The first idea was to be able to use the camera projection into a plane. Here the idea of personalisation would be intensified with player's own face projected inside the game world via a mirror or a character's face for example. By seeing himself or herself inside the game realm, the personalisation would be richer. For this experiment Prime 31's plugin "Live Texture" was used to investigate if this feature could easily be implemented within a game design.



During the camera projection investigation, a real time video from the front camera was projected inside a 3D model (a broken TV) from the "Horror House" experiment.

The texture of a broken glass was replaced in real time with the camera's "information".

The original idea was to "scare" the player by projecting his image onto the TV's screen as soon as the character got close to the TV.

The camera projection inside a 3D environment would allow players to perceive themselves during game play as actual characters – the player as part of the game narrative.

FIGURE 36 DOS SANTOS (2012) CAMERA EXPERIMENT (IPAD) - GAME

## 8.10 - Social Media Experiments

Unity 3D allows a series of third party and community-generated plugins to be utilised inside the game engine in order to minimise programming and coding time during game development. Some plugins tests during the social media experiments were Prime 31's "Social Media Network" and "Easy Facebook Connect Kit" by Studio Evil.

Prime's 31 plugin did not prove to be very useful for this project as it required a higher programming background level. Studio Evil's "Facebook Connect" was very easy and intuitive, which allowed basic Facebook connectivity to be achieved during the first experiments. The downside from the design point of view was the lack of support in mobile platforms (iPhone, iPad and Android), meaning that the login feature would be only be possible if Unity's web browser plugin was used.

The idea here was to evaluate whether a Unity 3D plugin would allow Facebook information to be retrieved as well as sent to the user's "wall". Here it was proved that this was possible.

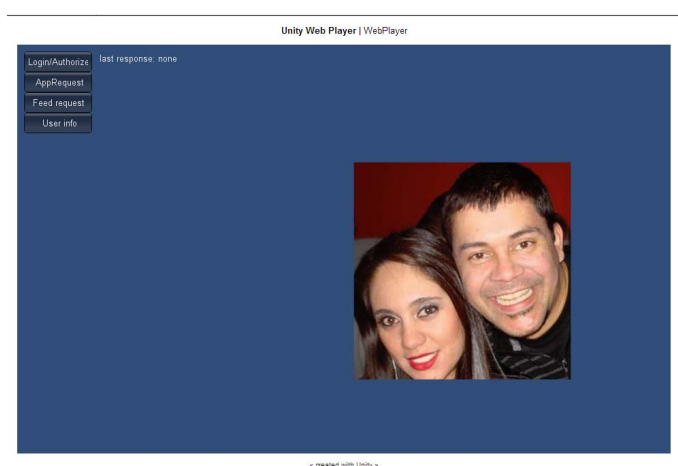


FIGURE 37 DOS SANTOS (2012) FACEBOOK INTEGRATION EXPERIMENT (IPAD) - GAME

## 8.11- Conclusion:

This experiment proved that a Facebook login could be used to retrieve the player's personal information and apply it to an in-game 3D object or plane. In this example I used my own Facebook login information in order to allow the plugin to project my picture into a plane inside Unity 3D. Facebook has a rather easy technique which allows developers to retrieve information from its data base. The Facebook API<sup>11</sup> allows developers to not only use Facebook as a mediator between players and their social media network, but it also allows player to seamlessly share their own information across a variety of game platforms.

The use of personal information inside the game narrative is essential for infusing individual and familiar elements into the game such as the user's photos, posts, friend list, shared articles and other user-generated content. Here these elements would be used in a coherent way to maximise immersion as well as customise the game narrative.

Unlike the current approach where social media are used as a way to send game information into the social media channels such as posting the player's score or in-game achievements, this project investigates the opposite usage. In order to make the game personalised, individual information should be incorporated into the game narrative and not the other way around. PCG would be used to dynamically bring personal information into the game narrative in real-time, and ultimately provide a unique and individual experience to each player.

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<sup>11</sup> Facebook API (Application Programming Interface) is a series of commands which allow developers to connect their application with Facebook database.

## 8.12 - Diaries of a traveller: using the physical space as way to personalise the game experience

After the first experiments, the project shifted towards the actual game prototype creation. The idea was to apply the experiments as well as the conclusion of investigation carried out during research into a form of a game prototype.

Many ideas were put into practice via conceptual art or even simplistic game experiments. The first key point to start designing the game prototype was to rethink mobility. This important iPad feature could potentially be used to make game immersion more profound. Therefore the player's physical location needed to be placed in context with the game environment in a meaningful way. The personal interpretation of the physical space was a way to make the player overlap sensorial experiences from the physical space into the game realm and vice versa. In order to achieve that, an airport was chosen as the game environment where players should also be in a real airport while playing the game.



FIGURE 38 DOS SANTOS (2012) DIARIES OF TRAVELLER SPLASH SCREEN ILLUSTRATION

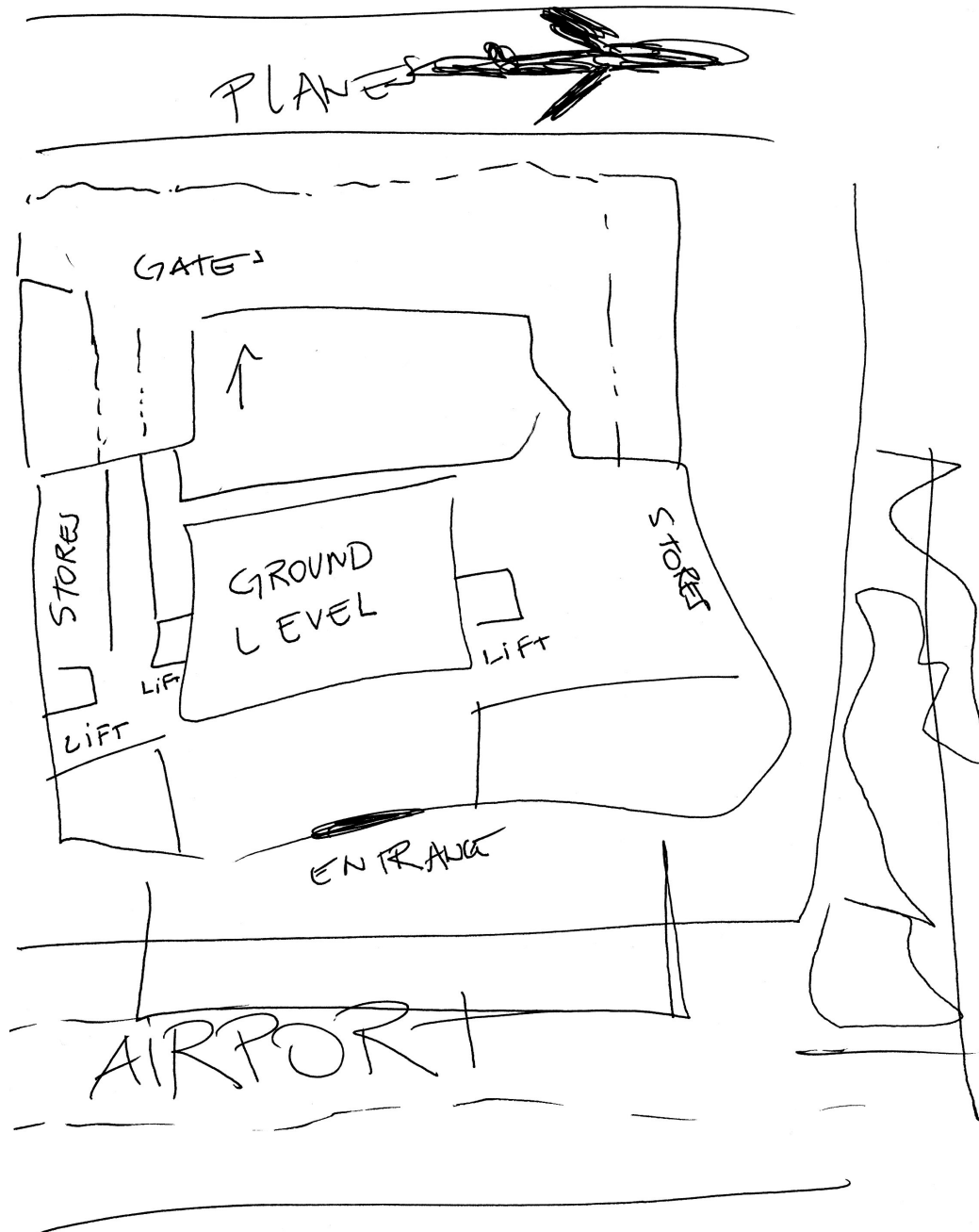


Figure 39 Dos Santos (2012) Diaries of Traveller Splash Sketches

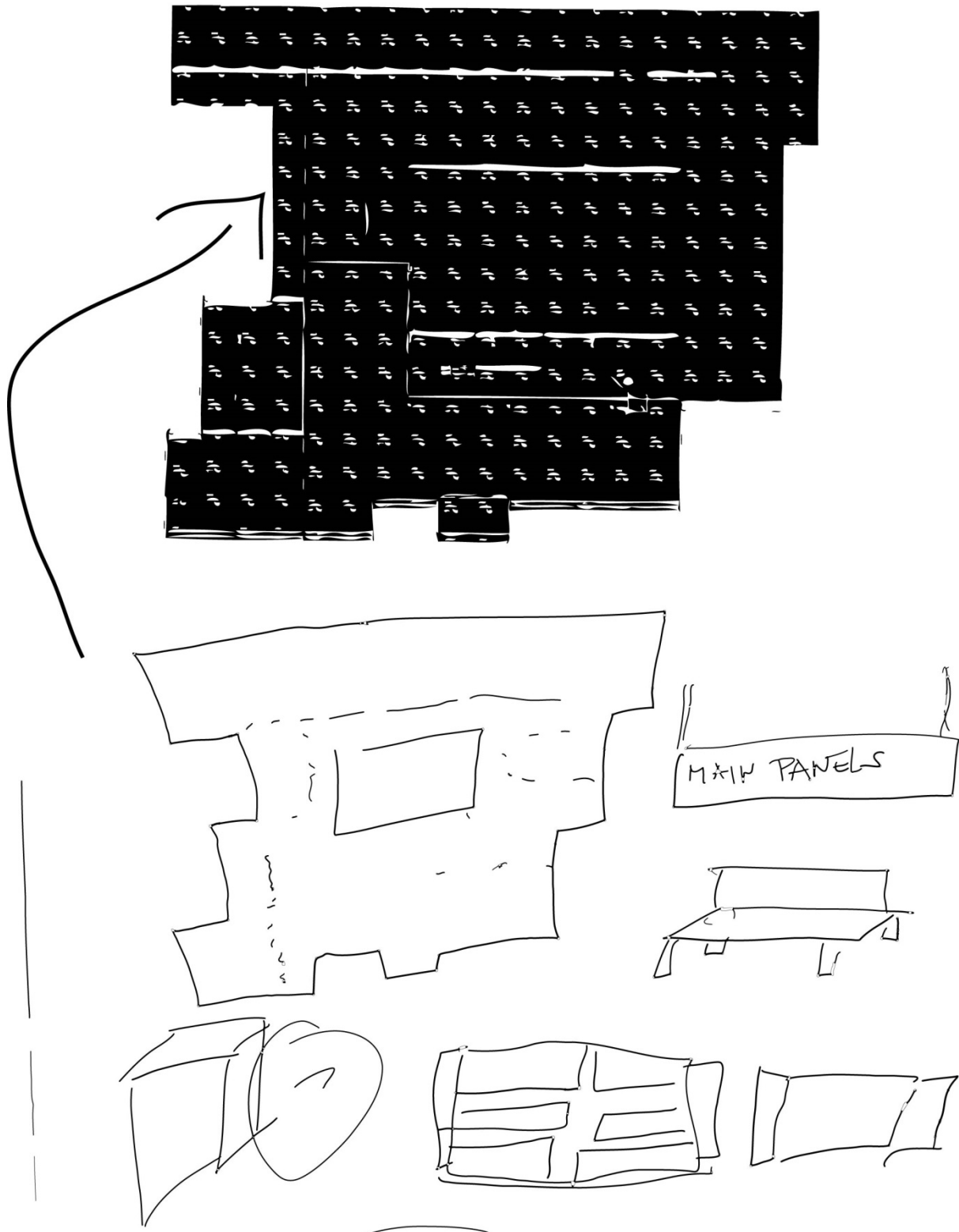


FIGURE 40 DOS SANTOS (2012) DIARIES OF TRAVELLER SPLASH SKETCHES



FIGURE 41 DOS SANTOS (2012) DIARIES OF TRAVELLER MAP ILLUSTRATION



The outbreak scenario cut scene video – one of the first ideas for the game narrative.

The airport would be the environment in which the player needed to escape within a time limit.

Puzzle solving would be the primary form of gameplay, where the player would have to unlock doors and explore the environment.

FIGURE 42 DOS SANTOS (2012) DIARIES OF TRAVELLER VIDEO - THE OUTBREAK



### 8.13 -The Airport - mobility in a coherent way

The iPad as a mobile device allows users to move themselves to any physical space while using it as game device. The idea of creating an airport as the game environment was a way to expose emotional vulnerability as one of the main features of that particular space. Here the idea of an airport as a space in the game realm as well as the physical space where the player would be in while playing the game made sense because it is a place which has specific rules that apply only to that particular environment. The same occurs within the game – events, narrative and actions from the game characters only make sense if placed inside that particular context. An airport as a holistic space on its own has the same characteristic of games – an independent set of rules.

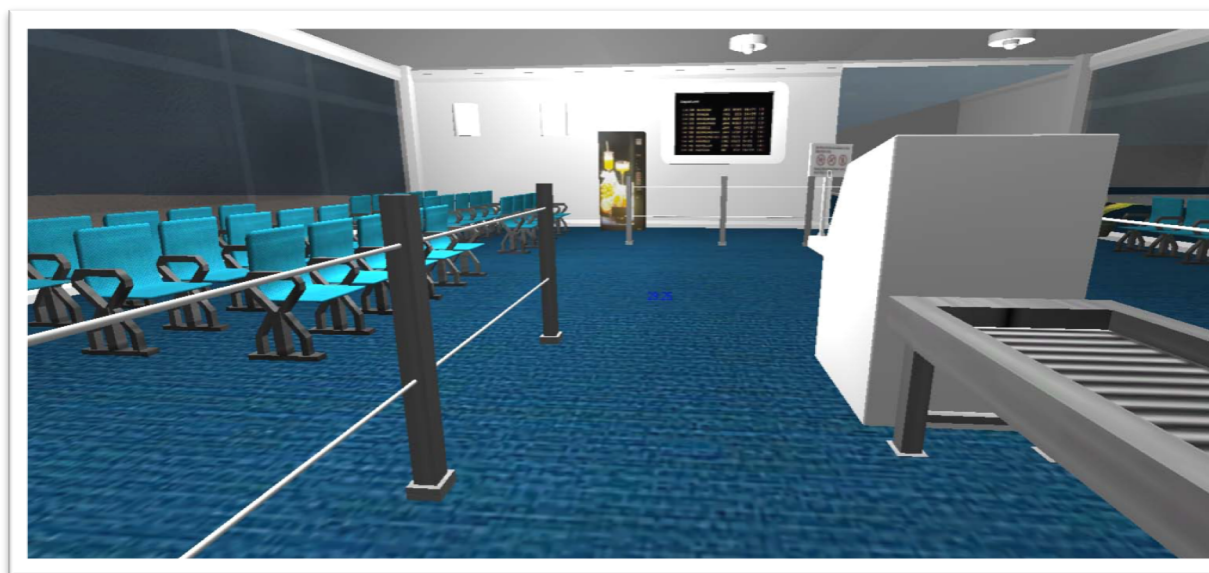


FIGURE 44 DOS SANTOS (2012) DIARIES OF TRAVELLER SCREENSHOTS (IPAD, PC) - GAME



FIGURE 45 DOS SANTOS (2012) DIARIES OF TRAVELLER SCREENSHOTS (IPAD, PC) - GAME



FIGURE 46 DOS SANTOS (2012) DIARIES OF TRAVELLER SCREENSHOTS (IPAD, PC) – GAME

### **8.13.1 - Weather change**

A set of environmental features would make the sensorial experience from of the game space blend into the player's physical space seamlessly. Sounds from the physical space would eventually be blended into the game sphere, as both share the same rules as a holistic space. The first main feature that would be independent of the game space was to have the weather dynamically changed in real-time inside the game based on the weather from the physical space. Real-time information from RSS feeds (XML information) retrieved from weather web sites such as weather.com, Yahoo Weather or accuweather.com would allow that information to be infused into the game code via Procedural Content Generation in order to update the game weather while the game was played. Such a feature would personalise the game space, allowing the sensorial experience from the physical space to be expressed within the game, taking personalisation to a whole new level.

The dynamic weather feature was not fully tested but investigation suggests that it is possible. Two main plugins would allow such a feature inside Unity development environment: Feed Unity Reader™, an XML application by Ennanzus Interactive and Unistorm™ Mobile, a dynamic weather plugin by Black Horizons Studio. By coding Unistorm™ with Feed Unity Reader™ the weather would change based on real-time information from weather websites. This feature would allow players to have no limitation of pre-defined weather inside the game realm which would create a deeper immersion during gameplay

**8.13.2 - Some mock-up experiments on how the game airport could have the weather dynamically changed.**



Figure 47 Dos Santos (2012) Diaries of Traveller screenshots - Dynamic Weather (Ipad, PC) - Game



FIGURE 48 DOS SANTOS (2012) DIARIES OF TRAVELLER SCREENSHOTS - DYNAMIC WEATHER (IPAD, PC) - GAME

### 8.13.2 - What time is it? Location as a determiner of time:



FIGURE 49 DOS SANTOS (2012) DIARIES OF TRAVELLER SCREENSHOTS - TIME UPDATE (IPAD, PC) – GAME

Another element that would potentially enhance personal immersion inside the game space would be the addition of a clock, updated in real-time. This feature would not only help the player to situate themselves within the physical space but also narrows the separation between the somatic and virtual environments. In-game time, for example a wall clock displayed in the game airport, would be updated in real-time based on the player's location. This feature was easily achieved by incorporating the iPad's clock information into the game by adding a series of command lines into the clock as a 3D object inside the game.



FIGURE 50 DOS SANTOS (2012) DIARIES OF TRAVELLER SCREENSHOTS - TIME UPDATE (IPAD, PC) - GAME

### 8.13.3 -Your flight was cancelled – real time flight information

Another feature would be adding real flight information inside the game flight board. That information would help players to keep track of their flight information while playing the game and waiting for their plane to arrive. Any information such as flight delay or cancellation would be displayed inside the game as a way to diminish the separation between the physical and virtual worlds

#### **8.13.4 - Where am I? Determining the player's physical location:**

One brilliant feature to make players' involvement within the game space more insightful would be the inclusion of real location information inside the game. TV screens and other devices within the game would display some sort of local information relevant to the player's physical location. This feature would be achieved by retrieving the player's location information via the iPad's built-in GPS. While this feature would contribute a more immersive and enhanced game experience, not all iPad models have embedded GPS, and so unfortunately this feature would not be a key driver of gameplay. The iPad models without GPS rely on Wi-Fi hotspots to identify the user's location, and these sometimes do not provide the user's real location, only an approximate one.

#### **8.13.5 - This music sounds familiar: Integrating the player's music library into the game**

Although physically larger than the iPhone, the iPad is still a personal device with a large amount of individual information. Apple's privacy policy is quite restrictive in what sort of information can be easily be taken from its devices. From a game development point of view, some kinds of information are easier to retrieve than others. The user's Music library is one example of accessible information.

Although influenced by movies where the soundtrack may either enhance or compromise the meaning of a particular scene, allowing the player to choose their own music during the game-play could add another level of personalisation to the game experience. If no music is present in the player's music library, a small selection of default soundtracks would be presented to choose from. Regardless of the player's choice, the game music would make the experience much more personal than imposing pre-defined music tracks as a non-editable element part of the game-play.

## **8.14 - Facebook integration – a key element for personalising the game experience**

While many elements of personalisation were investigated during this MDes project, retrieving personal information via social media networks such as Facebook was one of the first elements to inspire this project. Although a recent phenomenon, the advent of social media networks have been used in a profitable way for some time, placing the game experience as secondary to the generation of revenue. The main goal from the very beginning was to use some sort of personal information from the player's Facebook account inside the game narrative (even if the narrative was open to personal interpretation) in order to create a familiar game environment.

The core idea was to include different kinds of personal information in order to achieve an **absolute personal experience**, therefore allowing players to feel that they are actually inside the game narrative or environment with a minimum of effort, therefore making absolute personalisation a consequence.

### **8.14.1 - Facebook information: What can we use as game designers?**

Upon user's authorization via Facebook account login, of personal data can be used inside the game. For example pictures, posts and friend list information can be used to effectively create a personal experience if creatively incorporated into the game design. Personal pictures can be projected into planes; Facebook posts can be shown as on-screen texts and friend lists can be used to send game information back to Facebook, encouraging the player's friends to also play the game.

### 8.14.2 - Facebook integration via gameplay:

The main aspect of these features is to once again make the game narrative more familiar to the player as personal information becomes part of the game realm. During the design process of the airport game, a scenario was tested where the player had to leave the airport after having various kinds of personal information collected inside the airport. The information (including pictures and posts) would be displayed around the virtual airport as the player encountered objects that resembled the information category; pictures could be represented in the game as postcards, posts as newspaper articles and friend list as some sort of invitation card. This form of game-play would encourage players to explore the game environment in a way that also makes them realise how much information they share online – a critical insight as to how private the person is.

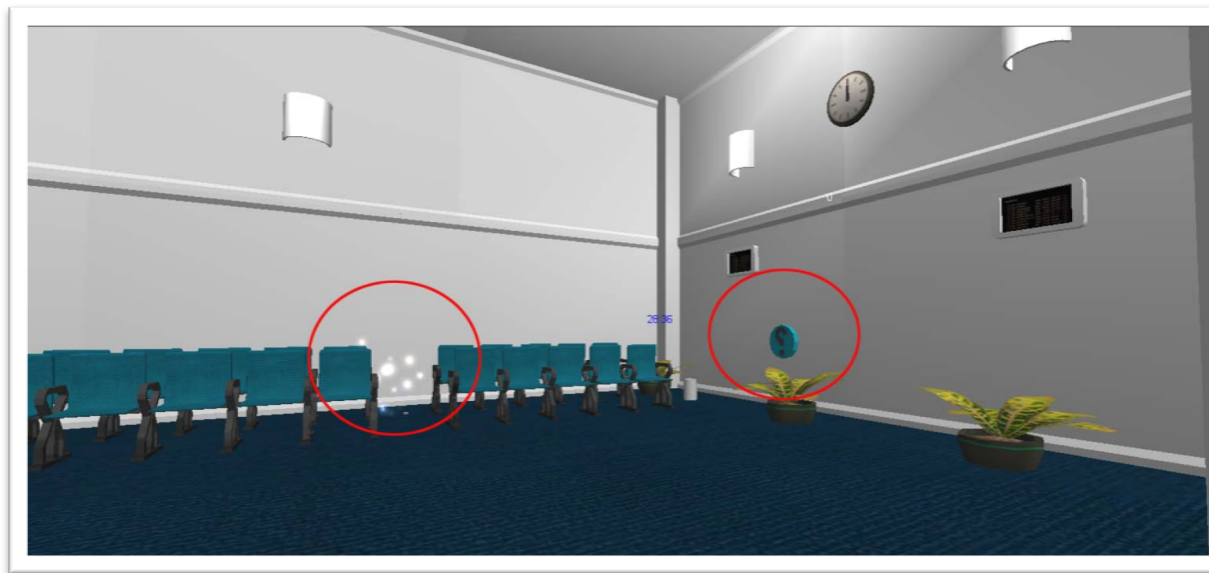


FIGURE 51 DOS SANTOS (2012) DIARIES OF TRAVELLER SCREENSHOTS - IN-GAME ELEMENTS (IPAD, PC) – GAME

### **8.15 - PCG as a way to “randomise” gameplay**

Another way to make the game closer to individual perception was to create a method in which every time the game is restarted a new game-play is presented. For example four essential elements of the gameplay would be: a time limit, the need to find personal information, the ability to collect rewards (coins) around the airport and the necessity of finding information that would lead to an explanation of why the player is the only person left at the airport. Based on these basic elements of gameplay a series of new elements could be added each time a new game session was started. Some examples include: creating a different atmosphere by using environmental features such as music and the introduction of new elements to change the game style – for example inserting zombies in a scenario where the player not only needs to find his personal information but also needs to protect himself from the creatures' attack in a 'hide and seek' version of the game.

## 9 - Final Conclusion

Over the course of this investigation a considerable volume of information regarding mechanisms of personalisation during gameplay was gathered by analysing a variety of games. A combination of existing approaches would be the best way to allow mobile game players to engage in richer game experiences. This research analysed and defined important game features such as customization and personalisation, theoretically allowing game developers and designers become more aware of the important differences between these fundamental concepts and their applicability throughout the game design/development process.

The definitions presented in this research may potentially be useful for game designers and developers who aim to provide such features within a game. Moreover, the presentation of the clear differences between customisation and personalisation may also allow gamers to understand how these discrete features work as mechanisms for engaging them into the gameplay or game narrative. As a result, it may provide players with a different perspective on how they consume games which offer these features.

During the course of my research, interesting extensions of the main subject arose which would benefit from further investigation, such as how mechanisms like Procedural Content Generation could be used to create endless game experiences without compromising the users' individual experience. Some of the personalisation features presented by this MDes project can be applied to other game platforms such as consoles, handheld and PC games. By using mobile devices as the main game platform for this research project, it was important to realize that mobile games are the direct consequence of years of game development. On the other hand, mobile capabilities are quite unique when compared to other game platform counterparts, offering the potential for new forms of experimentation and increasing the chances for innovative game mechanics or gameplay to arise.

Another important aspect considered during this research was the realisation that social media networks such as Facebook may be used as conduit to infuse personal information into the game narrative in a meaningful way, allowing game personalisation to achieve another layer of game immersion. Some of the experiments and theoretical approaches presented here could allow game designers to use such features more creatively than is currently used.

Mobility as a mechanism for bringing personal information into the game narrative or hypothetically into the gameplay was another important feature explored during this research. For example, using the player's location information as a way to extend the physical space into the virtual one would allow players to feel more comfortable within the game space as this data is infused into the game. *Diaries of traveller* uses an airport as the game's environment. The level of immersion while playing the game is determined by whether players are – or are not – physically present at an airport of any kind. In other words, players are intended to be physically located in a space that resembles the game environment while playing the game<sup>12</sup>. This duality between physical and virtual space brings players to a higher level of immersion. An airport was chosen as it includes the need to abide to specific rules that apply just in that specific space, a sense of constrained freedom and psychological connotations associated with airports such as abandonment, reunion or the fear of flying. Airports are places where people may experience or view extremes of emotion, something that is not usually encountered in our day-to-day lives.

*Diaries of Traveller* was intended to be played while player are at an airport (irrespective of country or state). More importantly, it was created to explore the concept of a game where the player could have a virtual environment which mimics or resembles their physical locality.

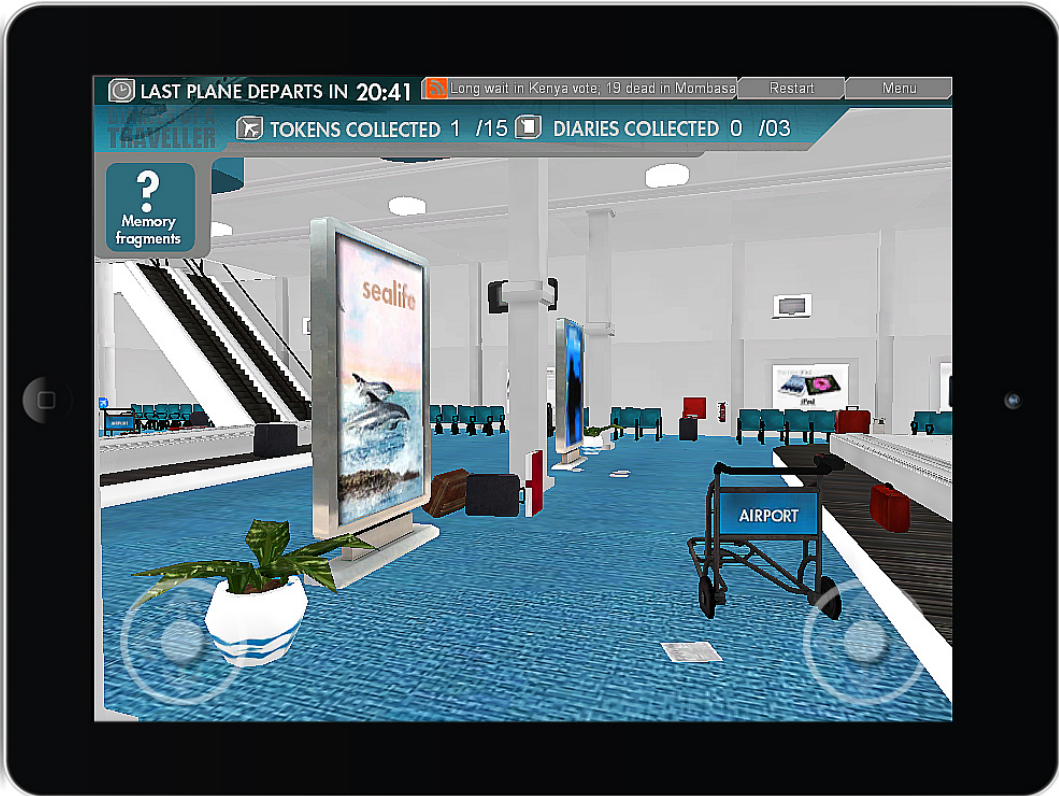
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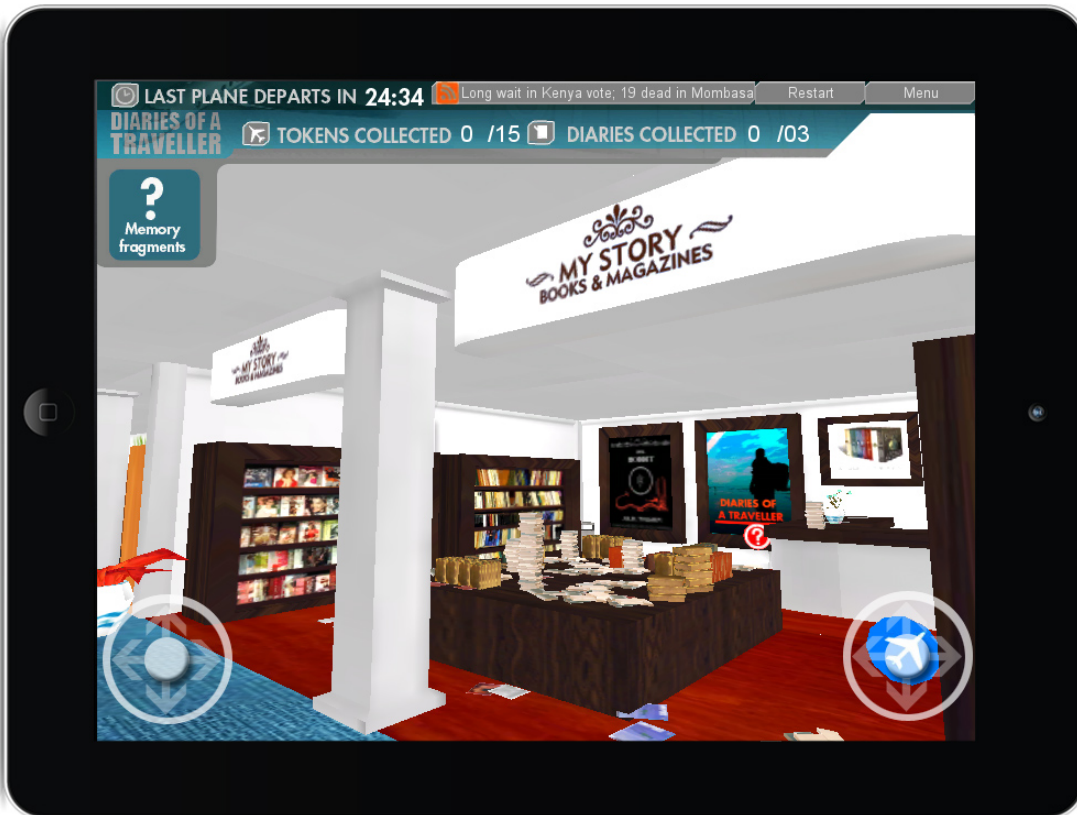
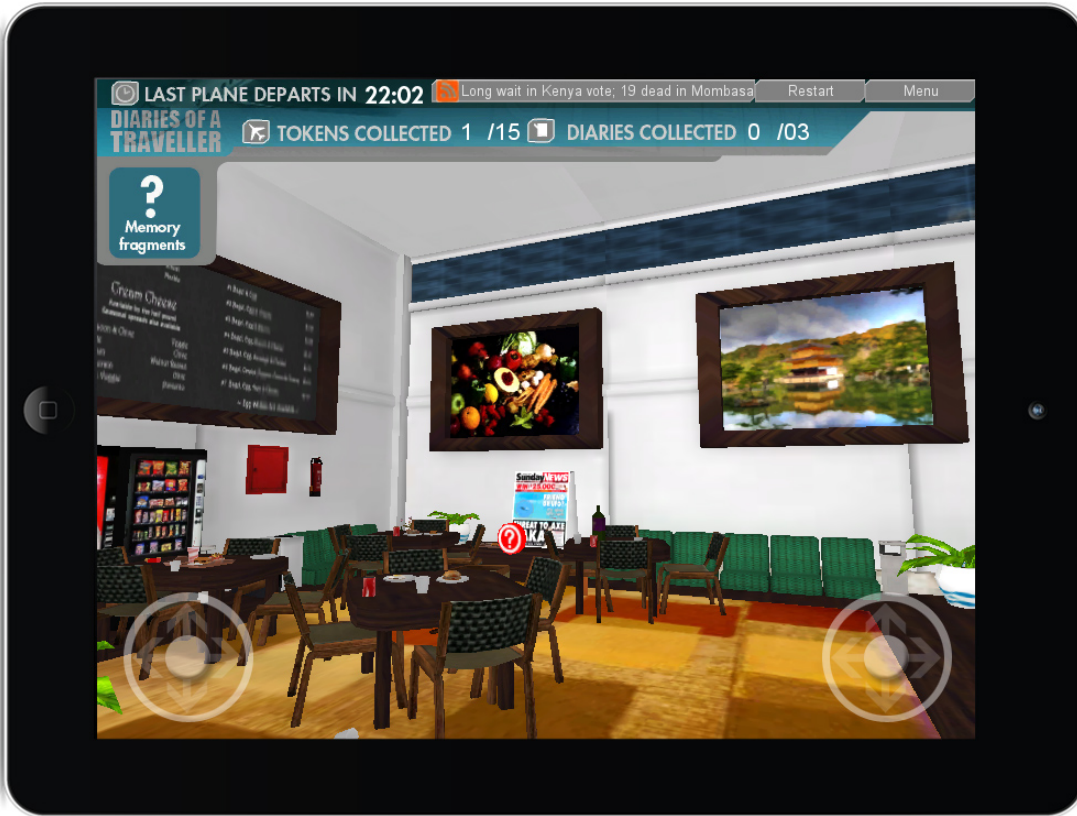
<sup>12</sup> While the game is meant to be played in an environment that mimics the player's real location, anyone could potentially play the game. However the immersion or even game experience would be completely unequal from the ones who play the game in place that resembles their physical location.

Also investigated during this MDes project was the use of Procedural Content Generation (real-time content generation) as a feature that could be used in a variety of scenarios ranging from game level randomisation through to retrieving information in real-time and applying that dynamically into the game narrative. PCG may be used in an innovative way if designers move away from traditional application and start to rethink its potential. Through radical applications of existing mechanisms it is possible to move away from how these tools have been applied to games during the past decades and take a different direction, taking into consideration its use along with user's personal information to create innovative and personal narratives and/or gameplay.

## 10-Final Project and Exhibition Images:













## 11 - Bibliography:

Aarseth, E. (2001) Computer game Studies, Year One. Retrieved on 12<sup>th</sup> of May 2012, <http://www.gamestudies.org/0101/editorial.html>

Ahearn, L. (2009). *3D game textures: create professional game art using Photoshop / Luke Ahearn*. Amsterdam; Boston: Focal Press/Elsevier, c2009.

Ben S., B., Jacob, H., & Tim, H. (2012). The Player as Author: Exploring the Effects of Mobile Gaming and the Location-Aware Interface on Storytelling. *Future Internet*, (1), 142.

Blossom, J. (2009). Content nation: surviving and thriving as social media changes our work, our lives, and our future.

Clavio E., Eagleman A., Kim K. & Kwak D. (2010) *Exploring the antecedents and consequences of personalizing sport video game experiences*. Sport Marketing Quarterly WV: West Virginia University Press

Dardis, F. E., Schmierbach, M., & Limperos, A. M. (2012). The impact of game customization and control mechanisms on recall of integral and peripheral brand placements in videogames. *Journal of Interactive Advertising*, 12(2), 1-12.

Egenfeldt-Nielsen, S., Smith, J., & Tosca, S. (2008). *Understanding video games : the essential introduction / Simon Egenfeldt-Nielsen, Jonas Heide Smith, Susana Pajares Tosca*. New York : Routledge, 2008.

Gosney, J. (2005). *Beyond Reality : A Guide to Alternate Reality Gaming*. Thomson Course Technology.

Galloway, A. R. (2006). *Gaming : essays on algorithmic culture / Alexander R. Galloway*. Minneapolis : University of Minnesota Press, c2006.

Grappiolo, C.; Yun-Gyung Cheong; Togelius, J.; Khaled, R.; Yannakakis, G.N.; (2011) , "Towards Player Adaptivity in a Serious Game for Conflict Resolution," *Games and Virtual Worlds for Serious Applications (VS-GAMES), 2011 Third International Conference on* , vol., no., pp.192-198, 4-6 May 2011

Greif, H., Hjorth, L., Lasen, A., & Lobet-Maris, C. (2011). *Cultures of participation : media practices, politics and literacy / Hajo Greif, Larissa Hjorth, Amparo Lasén, Claire Lobet-Maris (eds.)*. Frankfurt am Main : Lang, c2011.

Hjorth, L. (2011). *Games and gaming : an introduction to new media / by Larissa Hjorth*. Oxford : Berg, 2011.

Hjorth, L and G. Goggin (eds) (2009) *Mobile technologies: from telecommunication to Media* (London: Routledge).2009

Kirkpatrick, G. (2011). *Aesthetic theory and the video game / Graeme Kirkpatrick*. Manchester ; New York : Manchester University Press ; New York : distributed in the United States exclusively by Palgrave Macmillan, 2011.

King, L. (2002). *Game on : the history and culture of videogames / edited by Lucien King*. London : Laurence King, 2002.

Lee, D., Ahn, J., & Bang, Y. (2011). *Managing consumer privacy concerns in personalization: a strategic analysis of privacy protection*. *Mis quarterly*, 35(2), 423-A8.

Lantz, F. (2009). *Games are not media*. Retrieved on the 7<sup>th</sup> of May 2012, <http://gamedesignadvance.com/?p=1567>

Lister, M. (2008). *New media: a critical introduction / Martin Lister ... [et al.]*. Milton Park, Abingdon, Oxon ; New York, N.Y. : Routledge, 2009.

McAllister, K. S. (2004). *Game Work : Language, Power, and Computer Game Culture*. University of Alabama Press.

McCann, T. (2012). *The art of the App Store : the business of Apple development / Tyson McCann*. Hoboken, N.J. : Wiley ; Chichester : John Wiley [distributor], c2012.

Meigs, T. (2003). *Ultimate game design : building game worlds / Tom Meigs*. Berkeley, Calif. ; London : Osborne/McGraw-Hill, 2003.

Menard, M. (2012). *Game development with Unity / by Michelle Menard*. Boston, MA : Course Technology, 2012.

Ole Ertlov, H. (2010). Bernard Perron & Mark J.P. Wolf (Eds.): *The Video Game Theory Reader 2*. New York & London: Routledge. 2009. Bernard Perron & Mark J.P. Wolf (Eds.): *The Video Game Theory Reader 2*. New York & London: Routledge. 2009. *Mediekultur : Journal of Media and Communication Research*, (49),

*PCGames: Procedural Content Generation in Games [electronic resource]*. (n.d). ACM / Association for Computing Machinery.

Robertson, J. ( 2010). Why innovation is so hard? . Retrieved on 20<sup>th</sup> of September 2012, <http://www.volere.co.uk/sohard.htm>

Ross, M. (2012) The vertical cinema manifesto. Paper presented at MINA 2012 – Massey University - New Zealand

Silva, A. e., & Sutko, D. M. (2009). *Digital cityscapes : merging digital and urban play spaces / edited by Adriana de Souza e Silva & Daniel M. Sutko*. New York : Peter Lang, c2009.

Thompson, J., Berbank-Green, B., & Cusworth, N. (2007). *The computer game design course : principles, practices and techniques for the aspiring game designer* / Jim Thompson, Barnaby Berbank-Green, Nic Cusworth. London : Thames & Hudson, 2007.

Yannakakis, G.N.; Togelius, J. (2011) *Experience-Driven Procedural Content Generation, Affective Computing, IEEE Transactions on* , vol.2, no.3, pp.147-161, July-Sept.

Wardrip-Fruin, N., & Harrigan, P. (2003). *First person : new media as story, performance, and game* / edited by Noah Wardrip-Fruin and Pat Harrigan ; designed by Michael Crumpton. Cambridge, Mass. : MIT Press, 2003.

Watkins, A. (2011). *Creating games with Unity and Maya : how to develop fun and marketable 3D games* / Adam Watkins. Burlington, MA : Focal Press, c2011.

Wei-Chin Huang; Lu, T.; Wai-Chi Fang; (2011) , "An innovative interface design with smart phone for interactive computer game applications," *Games Innovation Conference (IGIC), 2011 IEEE International* , vol., no., pp.62-65, 2-3 Nov.

Wolf, M. P. (2008). *Video Game Explosion : A History from PONG to PlayStation and Beyond*. Greenwood Press.

Wolf, M., & Perron, B. (2003). *The video game theory reader* / edited by Mark J.P. Wolf and Bernard Perron. New York ; London : Routledge, 2003.

Yu H. & Trawick T. (2011) *Personalized Procedural Content Generation to Minimize Frustration & Boredom based on Ranking Algorithm*. Proceedings of the 7th Annual Conference on Artificial Intelligence and Interactive Digital Entertainment, Palo Alto, California, 2011.

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