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ToDiGRA



# ToDiGRA

Staffan Björk & Mathias Fuchs (Guest Editors)

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# Introduction

**Staffan Björk & Mathias Fuchs**

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## Editors' Introduction to the Special Issue

One of the aims of the Transactions of the Digital Games Research Association (ToDiGRA) is to collect the best received work presented at the DiGRA conferences. This special issue collects some of the highlights from the 2015 edition of the DiGRA conference held in Lüneburg, Germany (May 14-17). The conference theme of “Diversity of play: Games – Cultures – Identities” invited submissions that reflected upon the diversity of games and gaming and this compilation features some of the best work on that. As usual, the invited keynote speeches are not an integral part of the Transactions. We did however publish the keynotes in a separate open access publication that you might want to read in parallel with the peer-reviewed articles in this issue. You can find the booklet with the title “Diversity of Play” (ed Mathias Fuchs) published by meson press

## 2 Introduction

in Lüneburg available for free download at: <http://meson.press/books/diversity-of-play/>

The papers presented here are reworked versions of the highest rated submissions to the conference according to the double-blind review process. In the spirit of transparency, we feel it is important to disclose how we selected the entries for this issue. As is customary at DiGRA conferences, all submitted full-papers were double-blind peer-reviewed and the resulting selection reflects the breath of research presented at the conference. The issue's editors invited the ten papers that were ranked highest by the anonymous reviewers to submit to the journal issue, and added a paper that was an "audience favourite". All of the papers that you can find in this issue contribute in a substantial way to the conference topic of "Diversity of Play" and to various aspects of what we call game cultures.

Video game culture has had a self-image of being a distinct cultural form united by participants identifying themselves as "gamers" for many years. Variations in this identity have been perceived either in relation to preferred platform or level of commitment and skill (newbie, casual, core, pro, etc.). Today the popularity of games has increased dramatically, games have become more specialized and gaming is taking place in a number of divergent practices, from e-sports to gamification. In addition, the gamer position includes a number of roles, attitudes and identities such as: players, learners, users, fans, roleplayers, theory crafters, speed runners, etc. Furthermore, gamification and game-based learning, as well as the playful use of computer simulation for training purposes, is making it difficult to distinguish games from non-games.

Many of the papers provide new ways of looking at games thus supporting a plurality of approaches for researching games. **Pablo Abend** and **Benjamin Beil** analyze *Minecraft* and *LittleBigPlanet* using a praxeological approach to explore the concept of editor games in which players are co-creators of game worlds. **Fraser Allison** shows how the concept of focalization offers possibilities for analyzing subjective experiences

gained while playing digital games. **Darshana Jayemanne**, **Thomas Apperley** and **Bjorn Nansen** argue for using an “aesthetic of recruitment” in order to understand how hybrid play products function. Others look at specific games and analyze them from different perspectives. **Joe Baxter-Webb** presents a study of ICT students that highlights the complexity of relationships between gaming and their interest toward future computing careers. **Erik Champion** looks at computer role-playing games and argues that the meaning behind worlds, rituals and roles could be explored more to support digitally simulated social and cultural worlds. **Geoff Kaufman**, **Mary Flanagan** and **Max Seidman** investigate persuasive games and demonstrate how an “embedded design model” can be instrumental in developing strategies that open up a space of possibilities or even a potentially open mindset. **Brendan Keogh** looks at the game *Binary Domain* as a focal point for tracing how depictions of technology as dangerous have influenced video games. **Meg Barton** and colleagues present the serious game *Missing: The Final Secret* developed for mitigating cognitive biases. Rather than looking at specific games, **Raphaël Marczak**, **Gareth Schott** and **Pierre Hanna** present an extension to the feedback-based gameplay metrics method which exploits audio and visual output of games to produce accounts of player performance. And last, but not least, **Souvik Mukherjee** compares the depiction of slavery in video games and earlier media and contrasts this to the notion of freedom and agency in video games per se.

It brings us pride to show the variety of high quality creative research and scholarship that is published within game research and at DiGRA specifically.

## ACKNOWLEDGMENTS

We wish to thank the anonymous reviewers who reviewed for DiGRA 2015, the volunteers who donated their time and effort, Annika Waern for her particular commitment in the review process and the conference sponsors who all helped ensure that DiGRA 2015 was a success.



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## Editors of Play

### The Scripts and Practices of Co-creativity in Minecraft and LittleBigPlanet

Pablo Abend & Benjamin Beil

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#### ABSTRACT

Computer games can be described as assemblages which, to use a term borrowed from Science and Technology Studies, provide different scripts, setting the scene for user practices. Scripts include the game world's possibilities, restrictions, and the degree of freedom provided to the player. Lately, a new genre of games challenges these specifics. So-called editor games, like *Minecraft* or *LittleBigPlanet*, which entered the market with sweeping success, are not games in the traditional sense (in which players follow certain rules guided by narrative elements framing the gameplay). Instead, these sandbox games – often labeled as ‘digital LEGO’ or ‘co-creative open worlds’ – afford constructing a game world rather than playing within one. Following a praxeological approach, this essay will try to make co-creative processes in editor games accessible as a research object, by performing a critical evaluation of established

methods within Game Studies, complemented by an experimental focus group analysis.

## Keywords

modding, co-creativity, participatory culture, affordances

## INTRODUCTION

*Minecraft* (Mojang 2011), *LittleBigPlanet* (Media Molecule 2008), and, most recently, *Disney Infinity* (Avalanche Software 2013) and *Project Spark* (Team Dakota/SkyBox Labs 2014) open up action spaces for participatory practices to a wide circle of users. A process of popularizing co-creative practices is taking place, with the potential to alter and even transcend classical forms of participative media culture (cf. Jenkins 1992/2006a/2006b). These practices are related to, and have emerged from, the “community-based creative design” (Sotamaa 2003, 2) of the larger game modding scene, since the games themselves have their roots in editor software that is used to take part in game design and content creation. Whereas numerous sophisticated modding practices require the use of image editing and modeling software, and even demand advanced programming skills (modding in the narrow sense), in editor games, these practices (modding in a broader sense) have found their way into the gameplay itself. These games seem to be closer to the early game construction sets (e.g. Bill Budge’s *Pinball Construction Set* (1983)) and puzzlers (e.g. *The Incredible Machine* (Dynamix 1992), *Sid & Al’s Incredible Toons* (Jeff Tunnell 1993), or *Crazy Machines* (FAKT Software 2004)). Unlike sandbox simulations, such as *SimCity* (Maxis 1989), gameplay in editor games is not circled around a complex instant feedback system. Therefore, user-sided input is not subject to direct evaluation by the software itself and gratification is either delayed in time (*LittleBigPlanet*) or happens outside the game space altogether (*Minecraft*). In this context, online platforms for sharing user-generated creations become increasingly important and there is an extensive degree

of community building around editor games. These playboxes or sandboxes pose new questions regarding the player's motivation(s) and the appeal of a gameplay that consists of building a game world, rather than playing within one. Therefore, the material agency of the game (which usually becomes visible via the rule set, the game world, or the narration) seems to dissolve. Editor games, 'digital LEGO,' or 'co-creative open worlds' confront gamers and researchers with a new level of uncertainty and contingency. In this essay, we wish to investigate these issues, not only in theoretical terms, but within a case study of the games *Minecraft* and *LittleBigPlanet*. After a short overview of the characteristic features of these games, we will discuss some methodological issues, before introducing a media-ethnographically informed approach, which includes participant observation and screen capturing of a sample group's co-creativity, along with some of its results.

## 1: Lego vs. Playmobil

Computer games can be described as socio-technical assemblages (cf. Taylor 2009; De Paoli and Kerr 2010; Karppi and Sotamaa 2012)<sup>1</sup> which, to use a term borrowed from Science and Technology Studies, provide different scripts (cf. Akrich 1992) that set the scene for user practices.<sup>2</sup> These scripts become apparent as technical manifestations of design decisions which include not only the set of rules of a game, but also the enabling and restricting conditions of the game world, and the degree of freedom provided to the users by the overall gameplay. To describe the scripts used in editor games, such as *Minecraft* and

1. The concept of assemblages, as it is introduced in philosophy by Félix Guattari and Gilles Deleuze, has been adopted productively within the research of computer games. Taylor (2009) introduces a broad definition of the concept as a means to define the efficacious material and immaterial components of a particular field of study. "The notion of assemblage is one way to help us understand the range of actors (system, technologies, player, body, community, company, legal structures, etc.), concepts, practices, and relations that make up the play moment" (Taylor 2009, 332). For a more in-depth derivation of the term and its use in Game Studies see Karppi and Sotamaa (2012).
2. "Thus, like a film script, technical objects define a framework of action altogether with the actors and the space in which they are supposed to act." (Akrich 1992, 208).



*LittleBigPlanet*, we will draw an analogy between these scripts and the specifics of the philosophies of LEGO and Playmobil. In the case of *Minecraft*, this analogy is already used in the very marketing of the product. On the LEGO *Cuusoo* internet platform, in which users can submit and support ideas for new LEGO products, a *Minecraft*-LEGO-Set has become available after winning the popular vote through the support of ten thousand users within forty-eight hours.

Minecraft is about placing blocks to build anything you can imagine in the virtual world. You can build anything you imagine with LEGO bricks in the physical world. Minecraft and LEGO were meant to be together.<sup>3</sup>

*Minecraft* can be characterized as an open-world LEGO building set (cf. Schut 2014), in which the players move through blocky 3D landscapes that are procedurally generated at the start of every new game. These blocks represent different materials the player has to ‘mine’ in order to ‘craft’ items. *Minecraft* offers two different game modes: the creative mode, which focuses on the creation of complex structures by providing the player with an unlimited number of blocks (resources), and the survival mode, which compels the player to acquire and manage resources with the purpose of building a shelter to protect him/herself from the monsters populating the game world at night. Even the latter, more classical gameplay mode, relies strongly on editing mechanics (Duncan 2011).

At first sight, *Minecraft* may almost look like a counterdraft to current trends in the gaming industry, since its pixelated game world appears dated in contrast to the almost photorealistic graphics of the latest games. The action takes place in a sparse, empty, and relatively inanimate sandbox that adjusts its size according to the user’s space of action. Even the open, rather rudimentary, gaming mechanics seems odd in its ‘dramaturgy’, when compared with other contemporary games, especially narratively complex worlds, such as *The Last of Us* (Naughty Dog 2013).

*Minecraft* never tells the players what to do. They do not have a story objec-

3. <http://lego.cuusoo.com/ideas/view/4038> (accessed Jan. 2015).

tive, whether short-term or long term [sic]. How come *Minecraft* is not a mere level editor? (Léja-Six 2012: s. p.)

The action in *Minecraft* is neither structured through an obvious gameplay nor prescribed through narrative paths. Rules exist, but are unclear, and the player has to uncover them through experimentation, learn them through observation, or acquire them by reading information pages (such as wikis). It is this unmarkedness that poses new questions for Game Studies regarding the player's motivation and action.

As we compared *Minecraft* to LEGO, similarly, we may compare the overall appearance of *LittleBigPlanet* to some children's toys. The outcome of the design decisions has been compared to a miniature toy world like Playmobil and to puppet theatre, as it features an avatar called Sackboy, who is a reminiscence of the stuffed knitted puppets popular in Japan and known as *amigurumi* (cf. Westecott 2011). However, the scripts of interaction in the two games must be problematized differently, since they offer the player very different possibilities for action. *LittleBigPlanet*, released for PlayStation 3 in 2008, is one of the most prominent examples of the growing impact of user-generated content on the game market, especially in the console domain.<sup>4</sup> The story mode in *LittleBigPlanet* can provide from six to eight hours of gameplay and can be played by up to four players simultaneously. Nonetheless, the level editor is advertised as the central feature of the game and it offers a unique and ample array of functionalities – at least for console game standards. Users can publish their creations on the PlayStation Network through an easy-to-use sharing system, thus making them available to all members of the *LittleBigPlanet* community. The editable nature of *LittleBigPlanet* already plays a central role on the game's box art: "Use simple tools to make whatever you can think up." The developers have also realized the importance of distribution –so the advert continues:

4. Advertised by Sony as one of the most important titles of the year and highly praised by critics, Media Molecule's platformer building set is still regarded as a flagship of Gaming 2.0 (cf. Carless 2008; <http://www.metacritic.com/game/playstation-3/littlebigplanet>; accessed Jan. 2015).

“Go online and share everything with the *LittleBigPlanet* community.” Finally, the desire for innovation and the constant expansion of the game are correspondingly pointed out: “Download cool new stuff created by other *LittleBigPlanet* players. There’s a different game waiting to be played every time you go online!” The website Gamasutra describes *LittleBigPlanet*’s level editor as one of the most significant innovations of 2008:

*LittleBigPlanet* is as much about enabling gamers to participate in level design as anything else, which means its user design experience needed to at least approach the level of accessibility seen in more traditional gameplay. Certainly, creating a *LittleBigPlanet* level requires more investment of time and creativity than playing a *LittleBigPlanet* level, but it is telling that the lines between the two can be somewhat blurred. It is perhaps even more telling that, thanks to the game’s intuitive, real time nature of level editing, Media Molecule has shipped a creation mechanic that has proved enormously usable for end users while remaining standard issue for the studio’s professional designers. (Remo 2008)

Nevertheless, the meticulously organized editor structure provided by the developer appears to contradict the principle of “bottom-up modularization by users” (Jeppesen 2004, 10). Media Molecule’s system adopts many representative aspects of web communities, since it implements a sophisticated database system, which is organized through comment sections and Web 2.0 tag clouds.<sup>5</sup> In fact, *LittleBigPlanet* could be included in the wider category of digital mash-ups, since it lets players or users seamlessly combine popular cultural objects onto a single surface. The business opportunity for publishers lies in building markets to sell digital items comparable to free-to-play browser games and sometimes, in the case of *Disney Infinity*, provide a whole pre-scribed setting – simi-

5. However, shortly after the release of *LittleBigPlanet*, it became clear that replicating the structure of modding communities on a professional/commercial level results in an inexorably limited experience. The use of many beloved, yet often copyrighted, themes promptly compelled Media Molecule to reinforce the moderation of the online community and to remove those levels which contained legally protected material. As expected, these interventions encountered little enthusiasm within the community, but appear to be symptomatic of the commercialization/ professionalization of modding practices.

lar to the miniature theme worlds of Playmobil sets – that come with the ready-made commercially sold objects and characters.

## 2: EDITOR GAMES AND THE SCRIPTS OF PARTICIPATION

Editor games follow a similar path to the overall networked media economy as summarized by Web 2.0 evangelist Tim O’Reilly in his often-cited paper *What Is Web 2.0?* (2005). For example, many editor games appear as perpetual beta versions: the game never develops into a finished media object with closed borders and, therefore, never provides a panoramic overview over its affordances. On the contrary, the players can keep exploring and altering the game world in a co-creative way. This includes mashing-up existing content, combining provided building blocks, or even internalizing external contents, often by purchasing objects or scenarios. The content itself can also be provided by the users and can be included either in one’s own game world or in a shared one. In the case of *Minecraft*, in which users build their structures with relatively simple objects (blocks), the Web 2.0 factor comes in later in the process; users share their finished objects as downloads and video captures on YouTube – examples range from a true-to-scale Starship Enterprise<sup>6</sup> to a working computer that can be fed with algorithms.<sup>7</sup> *Minecraft*, it could be argued, represents an archetypical editor game. It takes some of the innovations of *LittleBigPlanet*, especially the editor appearance (albeit graphically different), that allows the direct editing of the level, using an avatar. However, *Minecraft* goes a decisive step further by completely erasing the boundaries between editor and game – always present in *LittleBigPlanet* – and thus transforming the constant editing of the game world into gameplay.

Consumer co-creative design has significantly opened up to the main-

6. “New Tour of the Minecraft Enterprise”, <http://www.youtube.com/watch?v=IXUkdrcey-w&feature=c4-overview&list=UUCVBDCCKZKEYeE4vveflZicQ> (accessed Jan. 2015).

7. “DEMO program of my redstone computer in Minecraft ‘BlueStone’” [http://www.youtube.com/watch?v=\\_kSnrT75uyk&feature=c4-overview&list=UUR714hG3j\\_XIVPTBJU-S71w](http://www.youtube.com/watch?v=_kSnrT75uyk&feature=c4-overview&list=UUR714hG3j_XIVPTBJU-S71w) (accessed Jan. 2015).

stream market through games like *Minecraft* and *LittleBigPlanet* – and it seems self-evident that, after the rise of the Web 2.0, a movement like Gaming 2.0 would arise. Nevertheless, the question remains as to which scripts of participation – using Akrich’s concept (1992) – are inscribed in these different forms of editor games. An analytical comparison between implicit participation inherent within the scripts of the software – users as providers of raw data – and explicit participation practices – users as providers of actual content – seems promising as a means to clarify the often conflicting nature of participative media cultures. In analyzing *LittleBigPlanet*’s editor, Trapp (2011) argues:

Though, at first glance, *LittleBigPlanet*’s editor seems to exhibit a strong ‘modding character’ through its in-game integration, on a second look, the level editor performs as a limited feature that only allows for a restricted and controlled degree of modification. The player essentially ‘plays’ the game as he designs levels within the boundaries of the given scope of action. (133)

While implicit participation is part of an underlying design principle (for example the sharing of links or the semantic annotation of contents) and is not bound to the deliberate decision to contribute: explicit participation depends on motivational factors and requires further commitment from the subject, for example active participation in a modding community (Schäfer 2011). The difference between the interface analysis and the praxeological perspective implied here constitutes a demand for a stronger consideration of the tools (since they inscribe the degrees of freedom into the gameplay) and the actual practices (since they show how the scripts are to be followed, counteracted, or even subverted) during the research of editor games. To date, research on the (cultural) history of co-creative games is scarce and, at best, it merely plays a role in the footnotes of texts on modding communities (Barton and Loguidice 2009). Consequently, discussing mods implies the existence of editing tools, but then again, usually just the end-products stand in the center of the debate, i.e. finished mods, instead of their development process. These “result-oriented considerations” (Gethmann and Hauser 2009, 9)

misjudge the agency of modding tools and their importance in design and editing processes (cf. Beil and Hensel 2011).

### 3: NEW METHODOLOGICAL CHALLENGES

First of all, playing practices are not clearly separable from everyday life any more (if they ever were), since casual games, gaming communities, and pervasive gaming undermine the distinction between play time and everyday activities. Or, as Malaby (2007) notes:

If by ‘play’ we are trying to signal a state or mode of human experience [...] – a way of engaging the world whatever one is doing – then we cannot simultaneously use it reliably as a label for a kind or form of distinct human activity (something that allows us to differentiate between activities that ‘are play’ and those that ‘are not’). (Malaby 2007, 100)

Like Johan Huizinga, Malaby (2007) regards play as an ever-present form of human experience as opposed to an activity clearly distinct from everyday life. Summarizing this point, one can state that playing and everyday life are not conceptually separable, but work as a practical distinction to locate specific experiences as a result of the script of the game. Furthermore, games can change over time, not only because of their rule sets, that prescribe different outputs at decisive passage points, but also through the practice of playing itself, sometimes with unintended consequences.

This is because any given singular moment in any given game may generate new practices or new meanings, which may in turn transform the way the game is played, either formally or practically (through a change in rules or conventions). (Malaby 2007, 103)

This means that games are not reducible either to rules alone or to the narrative paths that they offer. The practice of Gaming seems to be located in between the subject’s actions and the affordances of the technology in question. Affordances constitute opportunities for action which are deduced from the functionally relevant and invariable properties of an artifact, but depend on the subject’s ability to make use of

these properties (Gibson 1977; 1979).<sup>8</sup> Methodologically, this implies a constant sway of perspective. Akrich (1992) states:

Thus, if we are interested in technical objects and not in chimerae, we cannot be satisfied methodologically with the designer's or user's point of view alone. Instead we have to go back and forth continually between the designer and the user, between the designer's projected user and the real user, between the world inscribed in the object and the world described by its displacement. (208-209)

Therefore, playing produces a recursive quality that reveals itself in the processuality of play which is subject to emergent changes. In phenomenological terms, it is a fundamental experience in human life that we inhabit an uncertain world not built by us (cf. Malaby 2007, 107). In editor games in particular, players can overcome this uncertainty to some extent – a practice which then becomes challenging for Game Studies. The environments or action spaces of editor games serve as bridges between ready-made game worlds and the user's own creativity. The latter connects gaming with other aspects of life: in *Minecraft* (especially in its creative mode) and in *LittleBigPlanet* (in the analogous building mode) participation and creativity are not optional, but modes of interaction that are necessary in order to overcome the emptiness and uncertainty in the player's experience. Due to these characteristics of editor games – openness, unmarkedness, processuality – there is a need for fresh thinking and new methods of research, which take on a praxeological perspective to investigate games in the making.

8. Being physical properties, affordances are inherent to the objects in question. They are invariant to a subject's necessities and wants, but at the same time contingent upon the subject's abilities (implicit and explicit knowledge, experience, skill) in order to make proper use of an artifact. Therefore, affordances lie in-between the object and the subject circumventing the subject-object dichotomy, although the objects are granted primacy in the construction of meaning (Gibson 1977; 1979). Within game studies, the concept of affordances has been used in various contexts ranging from games for education, to theories of game design, to gamification (cf. Cardona-Rivera and Young 2014).

## 4: RESEARCH DESIGN

Aarseth (2003) argues that playing games is the only effective method of conducting research in Game Studies. He highly recommends that researchers should play to gain first-hand experience of the material. However, Aarseth also takes into account the use of paratexts, additional materials, such as manuals, reviews, and, more recently, Let's Play videos. In addition, he briefly mentions "observing others play" (Aarseth 2003, 6) as a resource for conducting research. Since the characteristics of editor games undermine the claim of an implicit player – which Aarseth takes for granted in his writings – who is inscribed into the fabric of every game and becomes visible as the script, we believe that it is not sufficient to intrinsically analyze these games. Research into co-creative processes has to look beyond the game space at the wider spatial, social, and cultural context of gaming (cf. Stevens, Satwicz and McCarthy 2008). Since there are many possibilities to play these games, the scripts in editor games are not strictly defined, but are subject to negotiation processes between the player and the game every single time.

### 4.1: Qualitative Usage Experiment

In order to deal with this forwarded uncertainty in editor games, we have decided to heed Aarseth's (2003) advice and observe other people play. For this purpose, we have conducted a focus group analysis with nine participants split into groups: one group played *Minecraft* and the other *LittleBigPlanet*.<sup>9</sup> During the course of a one-day workshop, the two groups used five computers and one PlayStation console. Members of the groups were undergraduate students and PhD candidates in Media and Theater Studies, Philosophy, and History.

So as to obtain comparable results – in this case comparable process routines – each team was assigned an objective. The task included, but was not limited to, building a castle. The task was specified and nar-

9. The focus group analysis took place during the "Summer Institute Cologne 2013", <http://sic.phil-fak.uni-koeln.de/19843.html> (accessed April 2015).



rowed down to Castle Wahn,<sup>10</sup> a late baroque-style, formerly moated castle, which was also the venue of the workshop, this made it both the gaming location and the desired outcome of play. The game modes used were limited to the creative mode in *Minecraft* and the level editor in *LittleBigPlanet*.

The experimental case study was conducted with two focus groups of players and one observer group. There were four people in the *LittleBigPlanet* group and five in the *Minecraft* group, while the observer group consisted of four people who were not playing. The uneven distribution in the groups did not constitute an obstacle, since the *LittleBigPlanet* group used one console with two controllers, and the *Minecraft* group had one computer per player. The computers were connected by a Local Area Network, so that the *Minecraft* players could collaborate on the same project. The two groups were playing in separate rooms.

The observation group used various documentation techniques: camera recordings (audio/video), to document the off-screen action; audio recordings, to conduct interviews and to document the discussions within the groups; and screen-capturing technology, to document on-screen activities. The last one could only be used in the *Minecraft* group, as it proved too difficult and expensive to capture the interface of the console game because additional hardware is needed in order to obtain high-quality video without limitations in the performance. Instead, for the *LittleBigPlanet* group, we aligned a camcorder mounted to a tripod on the TV screen. In addition to using the recording devices, members of the observer group also took notes, while watching the others play.

#### 4.2: Research Questions

The workshop was an experimental setting and a first approach to analyze the practices involved in playing editor games. It was also a first step to test and investigate different methods of data collection and evaluation. There was an overall methodological interest in the compari-

10. <http://www.schloss-wahn.de/>, (accessed April 2015).

son between the participatory structure inscribed into the appearance of the game and the actual participation acted out by the players *in situ*. Furthermore, there were specific research questions that could be answered through the analysis of the collected data. The most general question was related to the way in which players would approach co-creative open world games. Other questions were, for example, (1.) whether there are differences in approach between playing the unmarked game of *Minecraft*, and dealing with the rather prescribed world of *LittleBigPlanet* (2.) which pre-sets, rules, and modes of production would be agreed upon in the respective groups and (3.) would there be group dynamics or individual efforts to find a solution to overcome the unmarkedness of the interfaces?

## 5: FINDINGS AND CONCLUSION

As stated above, *LittleBigPlanet* and *Minecraft* offer different scripts for participation. *LittleBigPlanet* has a jump'n'run appearance – a gameplay mechanic that is also inherited in the editor mode of the game. Even though the interface seems to be intuitive, handling the avatars to build structures and to assign textures proved difficult. This was largely due to the fact that, in order to manage the menus, it is necessary to use a controller that selects the various items, colors, and textures via left/right/up/down operations and by rotating the control stick on the gamepad. In order to learn all the different operations, the game urges users to try out all the functionalities through tutorials, which seemed helpful at first, but quickly became cumbersome and delayed the actual building process. Since the editor mode in *LittleBigPlanet* was designed as a level editor for the game, there is an implicit appeal to build a playable construction. For example, because structures need to be climbable, distinct elements have to be joined by staircases and bridges. Another aspect inscribed into the jump'n'run editor is that the temporal structure is bound to causality and, therefore, screen space expands in a linear manner. The script urges builders to work from left to right. This is also reflected in the delete function: the player cannot delete isolated objects, but has to rewind

(going back in time), removing all the work done up to the point in which the desired deletion can be performed. This led to continual movement from left to right and, when players decided to start over and build a new structure, they moved to the right and opened up a new empty space.

*Minecraft*'s creative mode provides no tutorial guidance and only a few traces of the survival mode remain in the editor. The players are spawned in an open and empty game space, ready to go in all directions. The handling of *Minecraft* seemed to pose fewer problems to the participants of the study: the menus in the building mode are clearly structured and compartmentalized and making choices with the help of the mouse proved much easier than using the controller.

The main differences in the scripts lay in the player's degree of freedom, the underlying physics, and the overall orientation of the game world. *LittleBigPlanet* relies on jump'n'run mechanisms, this makes handling the game in the editor mode much harder at first. Users wishing to build something are distracted by the mechanics of the avatar – who is subject to artificial gravitational forces – and by the game space, rather than being able to concentrate on the translation of their ideas onto the screen and into the game world. Selecting the desired perspective is rather difficult, because players have the possibility of zooming in and out with the virtual camera in order to change the distance between the avatar and the depicted objects; in addition, objects can be variably scaled. The *Minecraft* avatars appear easier to handle, the setting allows more focus – there is no background voice giving instructions – and the physics are much more discreet.

In *LittleBigPlanet*, every element is freely adjustable, so there are no prescribed sizes. This hinders exact measuring making it difficult to link different elements to form a larger unit and to keep a consistent scale. Furthermore, nothing snaps into place, therefore combining pieces is difficult. This also holds true for the orientation: Once an object is rotated, players found it difficult to realign it horizontally.

## 5.1: Realism vs. Surrealism

In order to answer the question of why the two games afford courses of action as different as the surreal and playful attempt in *LittleBigPlanet* and the realistic and analytical attempt in *Minecraft*, one has to look at the scripts of these games, which allow, or prevent, certain patterns of action and which become fully visible while the game is played. The collected visual evidence points to certain properties that are crucial for the interactional experience.

The main distinctions in the creative approach of the two groups involved in the experiment can be described as divergent paradigms agreed upon by the members of the two groups. Foreseeably, *LittleBigPlanet* fostered a playful approach and design decisions were made *ad hoc* and in a spontaneous manner. In a pragmatic way, elements were chosen because they were immediately available, which means they were visible at the right moment and no further search operations in the item menus were necessary in order to identify alternative building blocks or structures. The names of materials in *LittleBigPlanet* are quite metaphorical and pictorial, resembling “digital copies of analogue materials” (Westecott 2011, 95): there are textures called “Aztec Gold” and “Aztec Jade”, “Red Deck Chair” or “Taxi Metal” (yellow framed by black and white stripes). These labels mix with rather concrete taxonomic descriptions: “Red-Painted Wood”, “Blue Glass”, “Mahogany Wood” or “Basic Polystyrene”. The elements are bundled in the “Popit” menu, forming different topics: “Balls”, “Bits and Bobs”, “Cogs”, “Food”, “Tutorials”, “Wheels”. The material section offers “Sponge”, “Stone”, “Wood”, and the general category of “Accessories”. Besides, there are several abstract shapes and functions to choose from. Players can paste stickers over textures and over the background. These stickers offer ready-to-use shapes to choose from: “Animals”, “Architecture”, “Body” (parts), “Colors”, “Decorative”, “Doodles” or “Concepts”. It is possible to cite various periods of art and architecture, e.g. one player labeled a sticker “baroque in a sense”.

In *Minecraft*, players can choose between different raw materials, such as wood, stone, or sand, but they cannot choose between specific objects of different shapes, because all the main elements are blocks of the same size. When approaching the actual building process, the players quickly agreed on taking a realistic approach. Realism, in this case, does not refer to a similarity in appearance, since building a castle with curved windows and doorframes out of blocks would have been impossible, but to an attempt to translate the brick and mortar structure of the castle into the block language of the game. What the players tried to achieve was mathematical realism in the manner of a true-to-scale digital model of the structure. This was achieved through the fieldwork of one of the participants, who first looked out of the window to estimate the height and width of the building, then later, walked outside with a pen and a piece of paper to count windows and bricks, and measure distances by rule of thumb and striding up and down. The result was the drawing of a sketch of a lateral view of the building, which was transferred to the whiteboard in the room. The drawing was later accompanied by a photograph of the castle, found online, which was projected on a screen.

## 5.2: Co-operation and Division of Labor

In *Minecraft*, players cooperated right from the beginning. At first, they encountered several technical issues, such as installing the game on every computer and setting up the LAN. When the building process started, the players assumed clear roles: a skilled player took command and oversaw the development of the work without damaging the group effort to crowd-source design solutions and to work out the ideal way to create a digital model of the castle. The analytical approach continued until the end of the experiment, despite some attempts at counter-gaming, in which one participant tried to undermine the constructive approach of the rest of the group by experimenting with TNT and trying to destroy what the others had built. For the rest, the *modus operandi* of the players was intriguing: the cooperation on the *Minecraft* project clearly resembled team work in a professional environment based on the division of labor.

With *LittleBigPlanet* the circumstances were different, as people had to work on the same screen, it was difficult to distribute tasks. Players were creating and working at the same time, and were frequently distracted by their own and each others' actions. Therefore, it is hard to establish what working pattern was developed: the participative environment of the game simply did not afford it (cf. Gibson 1977, 1979; Gaver 1991).

In *Minecraft*, the distribution of roles within the group led to a situation in which playing was coordinated towards efficiency. There was an accepted, and strictly adhered to, division of labor and every member of the team had a segment to work on, e.g. details of the façade, the roof, or the interior of the castle. This became apparent, amusingly, during the day and night circle. In *Minecraft*, time passes 72 times faster than real time, and, in order to skip night altogether, the player has to sleep, which is only possible by building a bed and lying in it at sunset. In multiplayer mode, every player in the game world has to be in his or her respective bed for the change to happen. The work day in our experiment was structured by the rising and setting of the *Minecraft* sun, simply because in the darkness of the night it was difficult, if not impossible, to work on the details of the castle. The beds were placed right in front of the construction site, so everybody could reach them swiftly. One *Minecraft* day equals 20 minutes of gameplay and every time dusk came along, someone would announce that all workers had to go to bed immediately. If someone was missing, the person was exhorted to hurry up and go to bed.

### 5.3: The Grid – Participation and Creativity

In *LittleBigPlanet* it is the foregrounding of the jump'n'run appearance and mechanisms that leads to spontaneous actions and playful arrangements. This includes the building elements themselves: these are not passive entities, but can fall down and move after they have been placed. For example, after being placed on its tip, a crescent-shaped object rolled over immediately. In *Minecraft*, the building blocks remain static, therefore they can be placed with precision. Once again, this shows that the

scripts of the editor games support different forms of creativity and prevent alternative approaches.

There were several attempts by two of the *LittleBigPlanet* players to focus and structure the building efforts on the castle and to plan the outcome. When one player handed over the controller to another, they had this conversation:

*LBP1: "Is there a plan?"*

*LBP2: "So maybe, as I said, we should start again with a plan? But on the other hand – maybe not!"*

*LBP1: "Let's try something that maybe looks like a castle."*

*LBP2: "All right, we can try. And what do you want to build?"*

*LBP1: "I'm not sure. Probably I could make the basement. Some kind of basement. Or the roof. Or the windows because I have those glass plates [...]."*

*LBP2: "Ok, so we start with what? What do you think?"*

*LBP1: "I just think a kind of shape."*

The different predefined elements, along with the selectable backgrounds, lead to a distributed aesthetic – different shapes, ornaments, and colors are combined together with freestyle drawings, there are only a few auxiliary lines to facilitate the exact placing of objects. In contrast, the analytic approach of the *Minecraft* group was supported by the transparency of the editor functions and, at the same time, by the opacity of the participatory structure, mainly the grid-like game world. The ever visible grid and the block shaped elements serve as mediators between the templates of the real world, the model in the minds of the players, and their actions on screen. It permits and structures the translation of the imagined look of the castle into the (block-) language of the game via the building blocks. With the help of the grid, *Minecraft* succeeds in introducing a frame of reference with clear and fixed relations, thus supporting the translation of metric dimensions into blocks. In this way, *Minecraft* encouraged the group to build a true-to-scale digital version of Castle Wahn.

Since the conversion factor is not defined by any script, the overall scale of the project was subject to a negotiation process and, in the end, was crowd-sourced. For example, the following conversation took place about the entrance door:

MC1: *“Now you count how many blocks appear large and longish to you.”*

MC2 *“According to the motto: ‘Imagine the portal of a castle and decide how long you would make it.’”*

MC1: *“Right. Or one length [of the castle] in general.”*

MC2: *“Look here [goes to the whiteboard]. The portal down here.”*

MC3: *“How wide I would build it? At least four [blocks], rather more. Depending on how high it is. We also have to consider the relation to the height.”*

MC2: *“I suggested building it six to eight. A width of six blocks, and eight blocks high.”*

MC3: *“Maybe we have to go outside again, to look at the actual height.”*

MC2: *“Well, this you see when you take a look outside.” [...]*

MC3: *“I don’t know, how many blocks do you need to build a window?”*

MC2: *“It depends how big you want to make them.”*

MC1: *“You can saw out one single block and look through already. But this is not a window.”*

MC3: *“It’s not a window, it’s a hole!”*

MC1: *“Yeah, but then you install glass and then you can state, this is a window.”*

MC2: *“All right. And if we build it two by two?”*

MC1: *“That looks silly. The bigger, the more blocks we use for the windows or for anything else the nicer it will certainly look.”*

MC2: *“The point is, we have to start out with one size.”*

MC2: *“And then we look at it, and check whether it is too big or whether we continue with this.”*

Similarly, the function of the basic *Minecraft* building blocks, which players arrange and rearrange within the game world, is subject to col-



lective decision-making. While *LittleBigPlanet* contains many elements that represent known and often popular artifacts, *Minecraft* only offers blocks with different textures and functions, like a box of LEGO. This does not mean that there is a higher degree of participation and creativity within *Minecraft*. It simply shows that there are different premises concerning the praxeological range of participation and creativity in editor games, and perhaps in the wider context of digital media. While *Minecraft* can be described as a digital re-mediation (Bolter and Grusin 2000) of analogue LEGO, its praxeological dimension is to use abstract and reduced building blocks to create structures that resemble their template's dimensions and on-site measurement. *LittleBigPlanet* seems to resemble a rather loose combination of different elements that are more or less fully formed. While the creative mode of *Minecraft* resembles playing with toy building blocks, or LEGO, the editor mode in *LittleBigPlanet* relies on the paradigm of compilation, remixing, and mashing-up to create collage-like surfaces associated with the content-sharing platforms of the so-called Web 2.0. Since the scripts of *LittleBigPlanet* do not directly afford the reversal of moves, the players have to leave behind their existing structures and move on to an empty space in the game world to continue building – this shows the cumulative character of the game. It is about constantly adding things, another similarity to participative practices in the Web 2.0, in which people keep on adding content and filling in blank spaces, rather than overwriting or deleting old or outdated contributions.

#### 5.4: Counter Gaming, Sabotage and Script Restrictions

Not all the members of the *Minecraft* group followed a realistic approach: one participant worked towards a counter-gaming strategy, trying to sabotage the work done by the others. At first, he tested *Minecraft*'s affordances for counteraction, digging holes and experimenting with explosive TNT blocks. After he accomplished several controlled detonations, he started building his own structure, which resulted in an underground dungeon-like tunnel system with several chambers. In one of the chambers he placed his bed, so that he could stay under-

ground even at night time. The anti-program of the player was in turn undermined by other group members and this happened both offline and within the game. One way of counteracting the single player's destructive behavior was reminding him verbally of the objective of the gaming effort. This was done by assigning specific tasks to this player, such as building one element of the façade. Furthermore, to abort the attempted sabotage, one member of the group flooded the tunnel system.

Counteractions like these could not be observed in the *LittleBigPlanet* group. Beside the fact that only two players can build at the same time, the game did not seem to foster a strategic group effort, except to overcome restrictions that the script introduced. One "mangle of play" (Steinkuehler 2006) which demanded coordination and cooperation is the way the virtual camera acts, as it follows only one player at a time (controller no. 1). For this reason, rather frequently one player would disappear and be lost outside the borders of the screen. This is a result of the jump'n'run orientation of the editor, which urges the players to orient their movements and their building efforts from left to right, since the original purpose is to build a playable level similar to the levels in story mode.

## 6: OUTLOOK

Within the praxeological comparison of the two editor games, our on- and off-screen captures and direct observation of players' interaction indicated great differences in the scripts of participation. *Minecraft* showed to be a multi-tool process, highly adaptable, and open for social negotiation. This was supported by the appearance of the building blocks whose design left plenty of room for the ascription of specific roles in the overall construction. In general, a cooperative script was provided by the technical structure of the game, as it affords cooperation in an open-source manner, in which everybody can open up a server (functioning as a distributed co-working space) and freely share content by distributing creations via a download link. The analysis, through a praxeological perspective, of the data gathered also revealed a strong tendency of

the *Minecraft* group towards a social organization based on the division of labor, related to the highly cooperative structure of the game. This intermingling of play and labor was traced back to the script that is hidden in the organization of the game space. It is the grid-like structure and the blocky elements that encourage players to take a very analytical approach using the blocks as the basis for a conversion table, to adjust and translate the real world to the grid (cf. Gehmann and Reiche 2014).

In contrast, *LittleBigPlanet* is part of a centrally controlled platform technology for playful level design which includes a distribution channel for user-generated content, rather than a tool of construction (Sotamaa 2010). The menus, the overall setting, and the fully formed shapes are not primarily meant for building things from scratch, but rather for combining and mashing-up existing cultural objects. Additionally, the technical pre-sets seem to be an obstacle for more than one player working on the same project simultaneously, since the automatic navigation of the virtual camera makes it hard to keep track of more than one avatar at a time. The editor mode prescribes the design and construction of a linear structure in the form of a jump'n'run game, the depth on the z-axis is limited, and it is not possible to directly delete particular elements. Therefore, the praxeological perspective reveals a rather accumulative practice in which things are constantly added, thus covering empty game space from left to right. This is just as it is on a weblog or on the Facebook timeline, in which nothing is ever deleted, but new things are constantly being added. The technical structure of *LittleBigPlanet* also supports sharing, but, in contrast to *Minecraft*, only via the central agency of the publisher, who, in turn, benefits from co-creative action, since user-generated levels extend the lifecycle of the game.

This essay is a fraction of a work in progress. There are, as yet, no definite answers to the overall question “What is participation?”, but research into the scripts and practices of editor games offers many starting points. A praxeological approach including affordances and taking actual user implementation into account proved valuable in beginning to define this new terrain of contemporary participatory culture.

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# Are You Out of Your Mind? Focalization in Digital Games

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## ABSTRACT

This paper demonstrates how the concept of focalization, as defined by Gérard Genette (1980), can be used to analyze experiences of subjectivity in digital games. Strategies to create internal focalization are identified in games' audiovisual presentation, provision and restriction of private knowledge, and ludic affordances. This provides a framework for games that seek to present diverse or distinctive perspectives, to allow players to access modes of thinking that accord with a mind other than their own. This framework can assist researchers, critics, and designers to identify ways in which digital games express elements of internal



focalization that communicate the mental patterns of a perspective character.

## Keywords

Focalization, perspective, subjectivity, Mirror's Edge, Grand Theft Auto, The Sims

## INTRODUCTION

In video games, it is typical for the player to be given control of one or more character-avatars that anchor the perspective on the game world. Drawing on cinematic and literary traditions, these characters are commonly provided with well-defined personalities, traits, abilities and motivations. In many cases, the player's viewpoint is literally inside the character's head – and yet rarely does the player know what their character is thinking.

This paper explores instances in which video games convey an experience of subjectivity, utilizing an appropriation of Gérard Genette's (1980) concept of *focalization*. The purpose is to provide a framework for analysis of designs that seek to present a distinctive perspective: a characteristic way of looking at and understanding the virtual environment, narrative and characters. The framework can assist researchers, critics, and designers to identify ways in which video games express internal focalization by communicating the mental patterns of one or more perspective characters, and can be used as a lens to survey opportunities for creating experiential narratives that allow the player to access modes of thinking that accord with a mind other than their own.

The paper begins with an overview of the contested theory of focalization, and the psychological understanding which informs it: that no two experiences of the same event are exactly alike. It reviews existing applications in video game studies of focalization, and seek to show that there is a greater scope for analysis of this kind than has yet been explored.

It proposes that focalization is apparent in video games through their audiovisual presentation, their provision and restriction of private knowledge<sup>1</sup>, and their ludic affordances. In particular, ludic affordances provide a degree of internal focalization to all character-based video games, giving the concept wide relevance within game studies and game criticism. An analysis of *The Sims 3* (The Sims Studio 2009), *Top Spin 4* (2K Czech 2011), *Mirror's Edge* (EA Digital Illusions CE 2008), *Grand Theft Auto V* (Rockstar North 2014), *Assassin's Creed II* (Ubisoft Montreal 2009) and *QWOP* (Foddy 2008) will show how each of the above channels can convey focalization, identifying opportunities for game designers to communicate the private, subjective experience of being a character with a distinctive worldview.

## 2: Focalization

To understand how something appears to a person, it is necessary to consider not only the place from which it is observed, but also the nature of the observer. As the psychologist William James noted: “what is called our ‘experience’ is almost entirely determined by our habits of attention.” (1892, 156) James illustrated this point with the analogy of four tourists:

“Let four men make a tour in Europe. One will bring home only picturesque impressions — costumes and colors, parks and views and works of architecture, pictures and statues. To another all this will be non-existent; and distances and prices, populations and drainage-arrangements, door- and window-fastenings, and other useful statistics will take their place. A third will give a rich account of the theatres, restaurants, and public halls, and naught besides; whilst the fourth will perhaps have been so wrapped in his own subjective broodings as to be able to tell little more than a few names of places through which he passed. Each has selected, out of the same mass of presented objects, those which suited his private interest and has made his experience thereby.” (James 1892, 156-157)

James observed that attention acts as a filter on our experience. Not

1. Private knowledge refers to information that is known to a character, but would not be observable to a hypothetical outside observer within the game space.

everything that we can physically see or observe enters our conscious experience; attention is also required, and attention is influenced by our mental state and our thinking at the time. This is apparent in the phenomenon of “inattentional blindness”, in which people fail to notice seemingly obvious things that are unrelated to the task on which they are focused. The effect has been tested with stimuli as striking as a clown on a unicycle (Hyman et al. 2009) and a person wearing a gorilla suit (Most et al. 2001). Beyond this, differences in knowledge and life experience affect the interpretation of a scene; consider how differently an automobile mechanic makes sense of a car engine than someone who has never peered under a hood, though their eyes see the same things.

The difference between a scene’s raw components and its subjective experience has been addressed by the narratologist Gérard Genette (1980). Genette drew a distinction between the position from which a story is told (its *narration*) and the position from which it is perceived (its *focalization*). Focalization defines how narrative information is selectively presented relative to the knowledge and experience of one or more characters within the scene. The concept is similar to *perspective*, but whereas perspective describes the position from which a scene is observed, focalization describes what aspects of the scene can be observed as compared to a character.

Genette proposed three categories of focalization. A narrative with *internal focalization* presents the inner thoughts, feelings, perceptions or knowledge of a perspective character. A narrative with *external focalization* presents only what is externally observable, such as characters’ speech and behavior. And a narrative with *zero focalization* is not bounded by any one character’s perspective, and presents information beyond what one person could experience – such as the inner thoughts and feelings of multiple characters. Some narratives switch between these modes of focalization.

Consider George R. R. Martin’s novel *A Game of Thrones* (1996) and its television adaptation, *Game of Thrones* (Benioff and Weiss 2011). Both

tell essentially the same story, with only minor differences in the events depicted. In both versions, the narrative switches between several perspective characters: we see and hear the events that they see and hear. Yet the focalization differs. The television series is externally focalized, so that we observe the words and actions of the perspective character, but cannot know what they are thinking or feeling. In contrast, the novel is internally focalized, with the perspective characters' thoughts revealed; so we can read of Lady Catelyn Stark's secret resentment towards her husband's bastard son, Jon Snow, which she does not admit to aloud. Thus, in the two versions the *story* is essentially the same, and the *perspective* is the same, but the *focalization* is different.

Genette's concept of focalization has become a core concept in narratology, but not without controversy. Mieke Bal (2009) argued for a significant divergence from Genette by adding the concept of the *focalizer*. Bal's *focalizer* is the subject of focalization, the active agent through which the narrative is perceived – the narrative equivalent of a camera lens. This is in contrast with Genette's concept of focalization as a passive property of the text. To Bal, internal and external focalization refer to the position of the focalizer inside or outside the fabula. Bal aligns focalization more closely with perspective, and broadens its application from literary written texts to visual texts, such as films and images. Genette himself (1988) disagreed with many of the proposed changes to his framework,<sup>2</sup> and the theory remains disputed. Manfred Jahn went so far as to say: "One of the questions that every narratologist has to decide for himself or herself is whether to adopt Genette's or Bal's terms" (2010, 176).

In this paper, I use Genette's framework primarily for its utility in exploring how the selection and presentation of information can provide an understanding of the private experience of a character. However, Bal's concept of the *focalizer* also has application for game studies, particularly with regards to visual presentation (see Nitsche 2005).

2. Genette has stated, "My study of focalizations has caused much ink to flow – no doubt, a little too much" (1988, 65).

## 2.1: Defining terms

Like a traditional narrative text, a video game experience incorporates several layers of identity and character in the interaction between the user and the text. Before discussing the relationships between these layers of identity that are described by focalization, it is useful to clearly define the terminology. Carter et al. (2012) differentiate four distinct constructs in how players understand the layers of identity in a digital game:

- *User*: The offline identity of the video game player.
- *Player*: The socially performed identity of the game player, which persists across play sessions and avatars.
- *Character*: The fictional identity within the narrative or setting of the virtual world.
- *Avatar*: The virtual visualization of the character as an entity.

Carter et al.'s terms were drawn from users of a multiplayer online virtual world, in which context the distinction between *user* and *player* is more relevant than in the more narrowly constrained single-player games that are the focus here. For the purpose of this paper, “player” is considered to be synonymous with “user”, as the real person who operates the controls.

Similarly, the concepts of *character* and *avatar* may be tightly bound together in the context of certain games that have a clearly defined and characterized player avatar (such as *Mirror's Edge*). In other cases, the player may have an avatar without a character (as in *Minecraft*, Mojang 2009), or a character without an avatar (as in *Civilization V*, Firaxis Games 2010).

## 2.2: Focalization in video game studies

The concept of focalization has infrequently been appropriated for use in video game studies (Nitsche 2005; Arjoranta 2015), but has broader

potential for application in both critical analysis and design for portraying the inner experience of a character rather than simply their perspective. Adapting Genette's concept of focalization provides a framework to understand this distinction, and to identify ways in which video games can present players with a manner of thinking that is subjective and foreign to their own – what Ian Bogost has called “another way of looking” (2008, 2). For designers and critics, it provides a terminology to discuss the alignment between characterization in narrative elements and characterization in play, and an analytical tool for designs that seek to facilitate player identification with a character perspective (as discussed in Papale 2014). Successfully creating player identification with a well-defined character can in turn influence players' self-perception, by allowing them to re-conceptualize themselves temporarily as the character and selectively take on perceived attributes of the character (Klimmt et al. 2009; Yee et al. 2009).

Focalization in its original form has been defined in relation to literary written texts and non-ergodic visual texts. The study of video games raises issues that are not present in these texts. To return to the previous example of George R. R. Martin's *A Game of Thrones* and its adaptations, consider *Game of Thrones: A Telltale Games Series* (Telltale Games 2014). The Telltale *Game of Thrones* is a single player episodic graphic adventure game, set in the same fictional world as the novel and television series. As in the novel and television series, the video game presents an ongoing narrative from the perspective of multiple characters. The game does not directly show any private thoughts or experiences of the perspective characters, and this could be taken to indicate external focalization. On the other hand, the game regularly presents the player with choices between different actions or conversation options. This could be interpreted to mean that the *character* is choosing between these options, and thus the game makes us privy to their internal decision making process. Or it could be understood that these are Schrödinger choices: once the player has made a decision, they have created a version of the story in which the character acted and thought a certain way, without any indication in retrospect that their choice was in doubt. This ques-

tion of interpretation is specific to ergodic texts such as video games (Aarseth 1997), and not accounted for in the terms of focalization drawn from narratology; different terms of reference are required for the video game medium.

This leads to a familiar and contentious question: is it appropriate to take a term that was coined to describe written texts and apply it to video games, when it is clear that the experience of playing a game can be worlds apart from the experience of reading a novel? In addressing the nature of this difference, Gordon Calleja (2009) has provided an example of how focalization remains a relevant and useful concept for describing game experiences. Calleja proposes the term *alterbiography* to frame how video game experiential narratives should be conceived: as a form of story generation, in which the story does not exist as an attribute of the video game artifact but is formed as a history of the player's interaction with the text. He defines alterbiography as "the active construction of an ongoing story that develops through interaction with the game world's topography, inhabitants, objects, game rules and coded physics" (2009, 5). Within this model of video game narrative, Calleja argues that the locus of focalization may be at the level of: a) the player's *self*; b) a game *entity* the player controls and is in some way anchored to; or c) multiple *miniatures* the player controls without identifying with any one of them specifically. This focalization is variable and dependent on the disposition of the player.

Perhaps the most extensive investigation of focalization for video game studies to date is that of Michael Nitsche (2005, 2008). Nitsche takes as his basis Mieke Bal's concept of focalization rather than Genette's, reasoning that Bal's adaptation is "more directly applicable to video games" (2005, 1) due to Bal's increased focus on visual storytelling. Accordingly, he addresses focalization predominantly in terms of visual presentation and virtual camera perspective:

"Focalization through the eyes of a virtual camera has been identified as a narrative element, which is conceptually as well as practically separable from a linear narrating 'telling voice.'" (Nitsche 2005, 5)

Nitsche explores how a player's attention is drawn to specific elements of a video game through visual focalization techniques, such as restricted virtual camera positioning, and analyzes cases in which the visual presentation of the game world itself is altered to reflect the mental state of the focal character, as in hallucinatory dream/drug sequences.

More recently, Jonne Arjoranta (2015) described the ways in which focalization, in Genette's terms, is apparent in digital games and how this is used to create meaning-effects. In addition to Genette's three categories of external, internal, and zero focalization, Arjoranta identifies a fourth category that arises when a game's perspective and control is situated within a character that is in other respects a blank slate:

"It can be argued that video games can make use of the character-internal perspective to achieve a perspective not available in literature. This perspective is embodied in the physical perspective of the character being played but does not allow access to their mental landscape in the manner of internal focalization. In other words, the player has control over a character's actions while not having access to the character's mental landscape." (Arjoranta 2015, 8)

Arjoranta calls this fourth category *embodied focalization*, and suggests that it is typically used to prompt the player to identify with the perspective character, and to view the in-game actions as their own. However, this situation raises the same question posed in the *Game of Thrones* example above: does control over a character's actions constitute an interior perspective, in that the player's will can be thought of as the character's will? Arjoranta says no, describing the perspective as a "behaviorist point of view" (2015, 6) that does not constitute internal focalization. However, in the next section I will argue that a games' control scheme and interface contain elements of internal focalization that has been previously overlooked, and which shape the player's experience to accord with that of the character.

Comparing these past utilizations of focalization in game studies calls attention to the conflicted nature of the underlying theory. Nitsche explicitly calls on "Bal's concept of focalization" (2005, 1), and in keep-



ing with Bal focuses strongly on visual presentation and the virtual camera as a determinant of focalization, with relatively little attention to other game elements such as affordances for action or indeed audio presentation; in contrast, Calleja invokes “the notion of focalization proposed by Genette” (2009, 4), and correspondingly defines focalization in terms of the *player’s* own experience of narrative situatedness rather than the game’s visual perspective. Arjoranta seeks to incorporate both sides of the concept by using Genette’s terminology as a basis, but focusing extensively on examples of visual (and to a lesser extent audio) perspective. Mindful of this schism in the underlying theory, this paper will focus on applying Genette’s core question, “who sees?” – Or to paraphrase for the video game medium, “whose mind is the signal?” – Across multiple aspects of the game experience: visual presentation, audio presentation, affordances for action and access to private knowledge.

A final related concept that is useful when thinking about focalization is *ludodiegesis*. This term was coined by Dan Pinchbeck (2007) to describe consistency between the interactivity of a game environment and the player’s perception of its presentation:

“Ludodiegesis is drawn from a player experience perspective based upon observations from cognitive science. It argues that our conscious experience of reality is formed from a subset of available information and, further, that this natural filtering system is historically manipulated to great effect by a large number of non-technological virtual realities such as ritual. Simply put, we are pre-disposed to accepting reduced sets of stimuli as significantly real.” (Pinchbeck 2007, 12)

Pinchbeck suggests that players build an understanding of a game world based on its visually suggested affordances – a concept taken from J.J. Gibson’s ecological theory of visual perception (1979), which contends that the mind’s perceptual system understands objects in terms of their opportunities for interaction (*affordances*). Pinchbeck argues that a discontinuity between expected and actual ludic affordances threatens the player’s experience of ludodiegesis. The next section will explore how internal focalization has been used in the design of some games as a strategy to bridge this potential discontinuity.

### 3: Focalization in video games

The focalization of a video game is apparent in its audiovisual presentation, as described by Nitsche (2005) and Arjoranta (2015), but also in its provision of characters' private knowledge and its affordances for action. Each category will be described using examples from *The Sims 3*, *Top Spin 4*, *Mirror's Edge*, *Grand Theft Auto V*, *Assassin's Creed II* and *QWOP*. In each of these games, the player controls one or more defined character-avatars that are presented as having wants or needs independent of the player. Each in their own way attempts to create some kind of empathy for the character's motivations, so that the player is motivated to do things specifically because their character would want to do so. This makes them well suited to illustrate the presence of internal focalization in the design of video games.

#### 3.1: Audiovisual presentation

Genette (1980) measured focalization with a simple yardstick: when the audience knows less than a character about the character's experiences, there is external focalization. When the audience knows the same as the character, there is internal focalization. When the audience knows more, there is zero focalization. On these criteria, perhaps the most common expression of internal focalization in video games is the provision of private knowledge through an extradiegetic heads-up display (HUD).

Such a HUD is a central feature of *The Sims 3*, a life simulation game viewed from a third person perspective, in which the player controls one or more virtual people ("Sims") in their daily life. Each Sim has a name and a characterization, expressed in such qualities as life goals, favorite foods, music and colors, and personality traits such as "Absent-Minded", "Loves The Cold" and "Eco-Friendly", all of which influence their behavior.

The player is made privy to the traits of their family of Sims through the HUD, which also shows such measures as how hungry, energetic and

clean the Sim feels at that moment. This information is only available for Sims within our control, which roots the focalization as internal to those Sims, giving the player greater understanding and therefore sympathy for them as characters, alongside the alterbiographical empathy of being in partial control of their actions. The game also indicates what Sims are thinking, in the form of thought bubbles that appear at times above a Sim's head containing an icon – for example, a gravestone, from which the player can infer the Sim is thinking about death.<sup>3</sup> The HUD and thought bubbles are hypermediate elements (Bolter and Grusin 1999), in that they are not implied to exist in the video game as objects that appear real to the characters. Rather, they reflect the game characters' private experiences and desires.

Such hypermediate elements are standard in the sports games genre, and act as a type of ability-based inner focalization signal, representing characters' private intuitive knowledge in a dynamic fashion. Consider *Top Spin 4*, a tennis game in which the player controls a professional tennis player on the Grand Slam circuit, and includes some real life players such as Roger Federer and Serena Williams. The player alternates between managing their character's career – choosing tournaments to play in and training programs to undertake through a set of menus – and controlling their character on the court, from a third person view that replicates the standard behind-the-baseline camera angle of televised tennis matches.

3. Characters in some story-driven video games can be heard to vocalize their thoughts to themselves for the benefit of the player; both *Mirror's Edge* and *Grand Theft Auto V* feature examples. This provides a simple test case distinction: if the character's thoughts are audible directly without speech, internal focalization is implied, but if the character is speaking aloud, internal focalization is not implied.

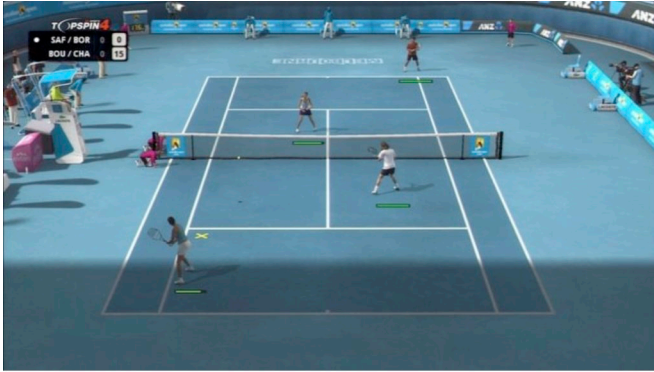


Figure 1: A yellow cross marks the landing point of an incoming ball in *Top Spin 4* (2K Czech 2011).

During the match play mode, when the player is facing an incoming shot, a yellow cross appears to mark where the ball will land (see Figure 1). This allows the player to anticipate the shot and move their avatar into position for a return shot. The marker is not a purely ludic device devoid of narrative or ludodiegetic significance: it serves to align the player’s experience of *Top Spin 4* matches with the experience of being a professional tennis player. A player may not have the ability to quickly calculate the landing point of an approaching tennis ball as it is in flight, but the character they are controlling would be expected to. By visualizing situational assessments that the character (but not the player) would intuitively make, *Top Spin 4* communicates to the player a subjective experience of being the character, rather than a “transparent” observation of the game space. In this sense, the presentation has an element of internal focalization.

That this information is a subjective judgment is suggested by the treatment of line-balls. Shots that will land outside of the court are not given a bounce marker – they are not presented as a target, just as an experienced tennis player judges not to hit a ball that is headed out of bounds. However, shots that are on a trajectory to bounce very close to the outside boundary – those that are “too close to call” until they land – are

also not given a bounce marker. This mirrors the limits of a real professional tennis player's ability to accurately predict a shot; in this situation, the character could not know for certain whether the ball would land in the court, and correspondingly, neither does the player.

*Mirror's Edge* goes much further still to give players the experience of an unfamiliar mind in action (Allison 2010).<sup>4</sup> It is presented in first-person perspective and designed around the experience of free running (parkour) in an urban environment. The perspective character, Faith Connors, is a courier who transports illegal packages and information across the rooftops of an unnamed modern city. Unlike *The Sims 3* and *Top Spin 4*, where degrees of internal focalization are communicated through extradiegetic elements, *Mirror's Edge* features a visual representation of the game world itself that is specific to the private, subjective mental models of Faith.

There are two primary visual styles in *Mirror's Edge*: one in cut-scenes and another in gameplay. During cut-scenes, the perspective is that of a third-person camera, and the visual presentation is relatively stylized, with a cartoon-like appearance. Objects are picked out in simple blocks of flat, bright, cel-shaded color. Cut-scenes feature frequent cuts between "camera positions" in a traditional cinematic style. Certain cut-scenes replace the bright colors and clean outlines with a blurrier, unfocused appearance, together with a voice-over narration by Faith speaking in past tense, which together indicate that these are Faith's slightly hazy recollections of past events. During gameplay, the perspective is first-person through the eyes of Faith, and the visual style is relatively photorealistic, with objects modeled and textured in detail. The only extradiegetic interface is a tiny white or blue dot at the center of the screen; this creates a highly immediate experience for the player, as it avoids elements such as a HUD that bring attention to the mediated nature of a video game interface (Bolter and Grusin 1999).

4. Calleja cites *Mirror's Edge* as a prime example of a video game that evokes an alterbiography of self, "where players interpret the events happening in the game as happening to them." (2009, 4; emphasis in original)

However, *Mirror's Edge* does not show an objective, “transparent” visual representation of its game world. Rather, it represents the game environment in terms of Faith’s attention to it, in a stylized visual presentation referred to as *Runner Vision*. Most objects in the game world are depicted as blank white shapes, including some that would ordinarily be colorful, such as fire hose reels and leafy pot plants (see Figure 2); specific objects are colored, using a limited palette in which each color has an associated meaning for Faith. Faith alludes to this schema in a voice-over narration in the opening cut-scene: “Runners see the city differently than regular people and understand the natural flow.”



*Figure 2: A pot plant and a fire hose box in Mirror's Edge (EA Digital Illusions CE 2008), colored white due to their perceived lack of relevance in the Runner Vision schema.*

White objects represent the visual *ground*, in Gestalt perceptual terms (Wagemans et al. 2012). These are the things that are visible to Faith, but form the background to her attention. Floors, walls and ceilings are typically white, including the entirety of most buildings outside Faith’s attentional pathway. Plants and fire hoses are white because, although they have a function, it is not relevant to Faith’s priorities. This selective whitewashing of the perceptual ground shows a kind of attentional blindness in which the relevance of an object is categorized according to the

character's perception of its ability to support continued movement – its affordances (Gibson 1979).

The color red signifies an object that facilitates fast traversal of the environment. For example, a red box can be jumped from to leap over a fence, and a red overhead pipe can be swung from to reach a distant ledge. Some red objects act as landmarks to orient the player towards their goal, such as a large red logo on a building that is Faith's goal to reach. Often, objects fade from white to red only as they move into Faith's zone of attention; for example, as a helicopter descends towards Faith, its landing skids change from white to red when it is close enough for Faith to jump up and grab on to them. Thus *Mirror's Edge* approaches the problem of ludodiegesis (Pinchbeck 2007) from the angle of focalization. Rather than only including objects in the game environment that provide ludic affordances, *Mirror's Edge* presents the ability to use objects as a function of the perspective character's interest in them.

The color blue marks objects that tend to slow Faith down or stop her progression. For example, a blue fence is likely to have a sheer drop behind it, and a blue staircase is likely to be slow for Faith to climb. Notably, the police forces that pursue Faith are referred to as "blues", and wear dark blue uniforms.



Figure 3: A rooftop in *Mirror's Edge* (EA Digital Illusions CE 2008). The ramp affords a jumping-off point, so is red. The staircase is blue, indicating that it will be slow to climb.

The color black represents danger. All firearms are jet black, as are the uniforms of the private security forces that constitute the more heavily armed and dangerous enemies Faith encounters; in general, the more physically dangerous the enemy or armament, the greater its surface area of black. Faith is herself dressed partly in black, appropriate to her abilities as a skilled hand-to-hand fighter.

The black theme ties in with the way that *Mirror's Edge* represents Faith's health. There is no extradiegetic health bar; any damage Faith takes is represented by the visual field progressively de-saturating and darkening. Simultaneously, the game audio fades down in volume and becomes muffled. When Faith loses consciousness, the screen fades completely to black and the game sound is silenced. The player is cut off from the game world, demonstrating that Faith's consciousness is the player's conduit into that world. This is unlike many first person games, which continue to show an image of the game environment after the player-controlled avatar dies (see for example *Halo 4*, 343 Industries 2012).

In both *Mirror's Edge* and *Top Spin 4*, it is possible to turn off some of the visual indicators described above. This increases the difficulty for the



player, but it also shifts the focalization away from the perspective of the expert character and towards a more neutral external focalization, as the player is forced to replace the character's mental patterns with his or her own. If the player's abilities are inadequate to the task, this creates a discontinuity with the experience of being an expert tennis player or free runner.

In *Grand Theft Auto V*, the player alternates control between three quite different characters: Michael De Santa, a wealthy, white, middle-aged father of two fighting a failing marriage, anger management issues and an existential crisis; Franklin Clinton, a cool-headed young black man seeking to escape his poor urban neighborhood and its cycles of petty crime and incarceration; and Trevor Philips, a middle-aged violent psychopath portrayed according to "white trash" stereotypes, with a strong entrepreneurial drive. These dissimilarities are not represented in the presentation of the game world, which appears the same no matter whom the player is controlling. However, specific events effect changes in the visual presentation that imply a degree of internal focalization.

Each of the three perspective characters has a unique ability. When the ability is activated, the visual presentation of the game world changes for a short period of time in a way that reflects the character's mental state. Franklin's ability depicts something resembling a flow state (Csikszentmihalyi 1990), in which the visual field tints to a cool shade of blue and time appears to slow down, allowing the player to calmly steer a vehicle through otherwise difficult maneuvers. In contrast, Trevor's special ability depicts a "red mist" state, in which the visual field tints to a sanguine red and Trevor gains a damage boost and a level of imperviousness to injury, allowing the player to rampage through a gunfight without heed to danger. These effects bring the player's experience in line with the depiction of their character: Franklin as a cool-headed and adept get-away driver, Trevor as a callous hothead with little fear of danger.

A further element of internal focalization in *Grand Theft Auto V* appears

during sequences in which the perspective characters hallucinate.<sup>5</sup> In one example, Michael imagines that he is abducted by aliens and dropped from their spacecraft above a neon-lit vision of his home city; as he falls slowly towards it, he hears reverberating echoes of his own self-doubts (“I always thought I was the good guy”; “It’s like I’m two different people”) and criticism from others (his daughter yelling “You ruined my life!”; his wife saying “You are nothing but a murdering, cheating hypocrite!”). Even after Michael’s senses return to his “reality”, the visual presentation retains an unfocused, flared-light quality that represents his visual perceptions gradually returning to a normal state. In these sequences, the audiovisual presentation of the game world is comprehensively altered so that what the player is seeing and hearing corresponds with what the character is seeing and hearing. The virtual camera perspective is external, so the player does not see through the characters’ eyes, but they do see the game world the way that the character does.

Video games, like films, also use music to illustrate a character’s private experience, often in response to changes in the environment. For example, in *Mirror’s Edge*, being pursued by an enemy triggers a swell of loud, high-tempo music, representing (and attempting to replicate in the player) Faith’s surge of adrenaline. Music in video games can be considered an element of internal focalization when it communicates or emphasizes a character’s emotional state.

### 3.2 Affordances

Law professor and political reform advocate, Lawrence Lessig (2000), has argued that the way in which a network system is designed should be considered as a question of values, because the programming is a powerful determinant of what people can and cannot do within the network – summarized as “code is law”.

5. Hallucinatory sequences of this type are relatively common in video games. They feature in *Far Cry 3* (Ubisoft Montreal 2012), *Max Payne* (Remedy Entertainment 2008) and *Eternal Darkness: Sanity’s Requiem* (Silicon Knights 2002), among many others.

The same is true of video game characters: their values are constrained by their programming. The player may control Franklin, Trevor and Michael in *Grand Theft Auto V*, but is only free to enact their lives within a prescribed set of behaviors. The scripted story of each character suggests that these are the only kinds of actions they see as available to them – we hear each one struggle with (or, in Trevor’s case, enjoy) a belief that their only options in life center around criminal behavior – and the player perceives this directly, through the limited set of actions they are able to direct the characters to take, which are almost exclusively violent and criminal in nature. The player defines the character by their choices of behavior, but the game designer establishes the possibility space within which the character may be so defined. Therefore it is valid to say that the character is violent and criminally disposed, rather than this being a reflection of the nature of the player that controls them. Code is character.

As has been described above, each of the perspective characters in *Grand Theft Auto V* has a unique ability, and these abilities reflect attributes of their personality as they are presented in the scripted dialogue: Franklin is cool and focused, Trevor is a hothead. Beyond this, however, the actions available for each character are identical. The player thus experiences these characters, “from the inside” as it were, as entities with nearly interchangeable values; each one equally ready to hijack a car at the press of a single button, or fire a gun on a crowded street at the pull of a trigger, and equally uninterested in, say, cooking up a meal when standing in their kitchen. It is a game with three perspectives, but not three points of view.

*The Sims 3* goes some way towards establishing a different action set for each character by limiting action options according to a combination of traits and dynamic statuses. Each Sim may have up to five personality traits, selected from a larger list, each of which will modify their actions or responses to events: an “Eco-Friendly” Sim will take showers faster than other Sims, and will gain a positive mood when gardening; an “Insane” Sim can talk to themselves to boost their level of social ful-

fillment; a “Hydrophobic” Sim will avoid swimming pools. Behavioral options are also affected by dynamic statuses, such as the strength of a relationship, which determines whether one Sim can choose to kiss another. All together, these factors establish distinctive personality frameworks so that the player understands the distinct private mental boundaries of their Sims.

Although it has only one perspective, *Mirror’s Edge* once again provides a strong impression of internal focalization through its affordances. Simply learning the control scheme for Faith conveys to the player that her expertise and attention is directed towards efficient movement: there are nine control inputs for movement and orientation, one to interact with objects in the environment (most of which open up new passages), one to focus (slowing game time *a la* Franklin’s ability in *Grand Theft Auto V*), and only two for combat – one of which is a disarming move, and the other of which is used as often for slamming open doors as for fighting. Unlike most first-person games that involve shooting, there is no ability to switch between guns, or to reload; the button to pick up a weapon also throws it away at a touch, or Faith will discard it automatically once the magazine is empty, or if she needs her hands free for an acrobatic movement.

To the player, Faith feels most potent and adept when she is moving freely. Picking up a weapon makes the player feel paradoxically less powerful, in part because Faith’s foot speed slows significantly and in part because aiming the weapon is a more manual, less context-sensitive action than movement. This creates for the player a reluctance to engage in combat and a frustration when sighting opponents – which are concordant with the experience of a character whose goals and motivations do not involve violence. Although many critics cited the frustration of combat as a flaw in the game design,<sup>9</sup> Ian Bogost proposed that it should instead be read as an insight into the experience of Faith: “Instead of reading the game’s combat system as a weakness, we can understand *Mirror’s Edge* instead as a game about a character’s weakness.” (2008, 4)

The operations involved in movement provide a more finely tuned experience of the character, which can be seen most clearly in comparison to other video games in which the player controls an athletic runner. In *Mirror's Edge*, the primary movement commands are lightly contextually sensitive: the “up” command will cause Faith to jump, or vault over a low object, or launch into a leap from a low step, or run for a short distance along a wall, if these objects are in the correct position when the player presses the button; similarly, the “down” button will cause Faith to crouch, or slide under a suspended object, or tumble through the landing of a jump. However, the player must orient Faith perfectly and activate her controls with precise timing, or risk falling to their death; the experience is one of competence in a difficult, demanding and dangerous task.

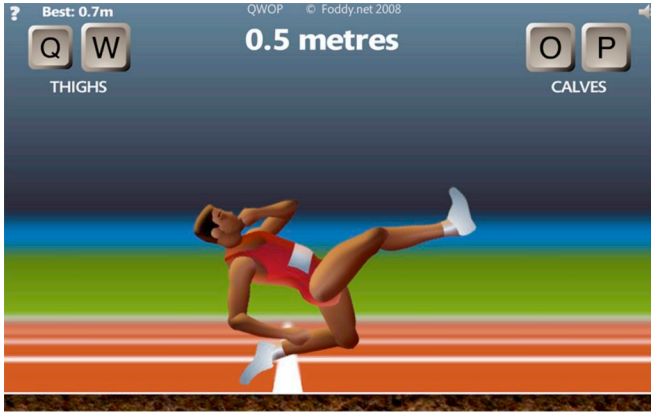
It is informative to contrast the control scheme in *Mirror's Edge* with two video games that were published at around the same time: *Assassin's Creed II* and *QWOP*. Both are likewise centrally concerned with the task of fluent movement, but feature control schemes that provide very different experiences of their central characters.

In *Assassin's Creed II*, the player also controls a free runner – Ezio Auditore – traversing city rooftops at speed, with even more contextually dependent controls. By holding down a single button, the player must only point Ezio towards a series of handholds and he will climb, leap and shimmy his way up any obstacle; holding down a second button will cause him to do all of this faster and add flying leaps. The close clustering of buildings and surfeit of handholds on the Renaissance architecture means leaping blindly into space is often rewarded with a safe landing, and even a hard landing is rarely fatal. In contrast to *Mirror's Edge*, the player's experience of Ezio is a nearly effortless mastery of the environment in which timing is unimportant and the need for precision is comparatively generous. This makes the player's experience accord with the external portrayal of the character, as an impulsive, dashing optimist with little sense of danger.

At the other end of the scale is *QWOP*, in which the player controls an Olympic sprinter named Qwop, visually modeled on Carl Lewis (see Figure 4). *QWOP* is notable for its extremely manual control scheme. The keyboard letters Q and W lift Qwop's right and left thighs, and the letters O and P lift Qwop's left and right calves. The objective is to reach the end of a one hundred meter running track without falling over. In contrast to *Mirror's Edge* and *Assassin's Creed II*, *QWOP* contains no context sensitivity in the controls; Qwop will not even maintain his own balance. Extensive practice is needed to move Qwop without him falling onto his face or flipping over backwards. The experience is disorienting, and intentionally distant from the expectations of how it feels to be an Olympic athlete, as the game's creator, Bennett Foddy, expressed in an interview:

“Friends told me I should make the character in *QWOP* a drunk guy trying to get home from the pub, rather than an Olympic runner. But I think if I had done that it would have felt like the point of the game was to stumble awkwardly, rather than run smoothly. Most of the value in *QWOP*, for me, comes from the fact that you're trying — and usually failing — to run like a normal person. Making him an Olympic athlete sets up a particular context where running fast is expected, and this maximizes that feeling of playful frustration when you fall over on your head.” (Cook 2011)

This frustration comes with a sense of being locked out of the mental functions that normally make walking and balancing automatic processes. Unlike Faith in *Mirror's Edge* and Ezio in *Assassin's Creed II*, Qwop's presumed expertise at running is locked away from the player. Qwop remains an enigma whose inner world we have only the tiniest sliver of access to.



*Figure 4: In QWOP (Foddy 2008), the simple action of walking is made difficult by controls that map each leg muscle to a different key.*

### 3: Discussion and conclusion

Video games in which a player directly controls a character have opportunities to convey the character's subjective experience and ways of thinking to the player. Whether the audiovisual style is photorealistic or stylized, the presentation of the game environment can be suggestive of the subjectivity of the character that views it – as is commonly seen in a few specific patterns, such as hallucinatory sequences. The ludic affordances of such video games typically convey a great deal about the character's nature, goals and mental models, as well as their abilities. In doing so, the player's own perspective and way of thinking is shaped according to what is required to operate the video game. This gives game designers a powerful opportunity to present a diversity of perspectives and open up particular desired experiences for the player.

This paper has proposed an appropriation and adaptation of Gérard Genette's concept of focalization for video game studies as a framework for understanding how video games allow their players access to different ways of seeing and relating to the virtual environment. Nitsche, Calleja and Arjoranta's applications of focalization in video game stud-

ies have been reviewed, as well as Pinchbeck's related concept of ludodiegesis. These applications demonstrate the utility of focalization as a framework for video game studies, but do not cover the full scope for analysis possible. Examples drawn from various video games have shown that audiovisual presentation, access to private knowledge and ludic affordances all have the potential to communicate the inner, subjective experience of a character to the player. Focalization can be a useful concept for game designers and critics to talk about the framing of a video game's presentation as internal or external to the character's experience, and to consider the effects of adjustments to this framing.

Video games do not present a strictly narrative storytelling experience in the manner of the literary and filmic texts that form the basis of Genette and Bal's idea of focalization. This paper has addressed how the ludic affordances of video games complicate a simple reading of focalization, but this deserves further consideration with regards to the alterbiographical nature of video game narratives.

This paper has sought to present a variety of examples to demonstrate the wide potential for application of focalization within video game studies. However, an ideal case study has not been addressed: a video game or virtual world in which multiple characters are controllable, and the presentation and ludic affordances of the game space are substantially different for each one. This would provide rich soil for an analysis of the variations between viewpoints and the effect of these on the player experience.

A final question that requires further study is whether changes to focalization influence a player's self-perception. Klimmt et al. (2009) have advanced the theory that players identify with their game-world avatars, and selectively adjust their self-concept to reflect characteristics of its character. It is not yet understood how changes to the focalization of the experience may influence this effect. For example, both *Mirror's Edge* and *Top Spin 4* have options to increase the difficulty of the game by removing some of the visual information that conveys the character's



private knowledge (Runner Vision in *Mirror's Edge* and bounce markers in *Top Spin 4*). In so doing they force a substitution of the player's own mental processes for those of the character, shifting the game to a more external focalization. Further empirical research is suggested to understand how this affects the player's identification with the character and the consequences this may have for the player's experience and self-perception.

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# The Use of Theory in Designing a Serious Game for the Reduction of Cognitive Biases

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## ABSTRACT

In the current study, a serious game was developed to address a training challenge: teaching players to recognize and mitigate their cognitive biases. Cognitive biases, which are human tendencies to commit systematic errors in thinking that lead to irrational judgments, are deeply ingrained and difficult to alter. This paper describes the theory-based approach we employed to create a game for the mitigation of cognitive biases – a challenging and abstract training topic. A cognitive bias framework that relates the target cognitive biases, their causes, and effective bias mitigation techniques was developed and incorporated into the game design. The resultant serious game, titled *Missing: The Final*

*Secret* (hereinafter: *Missing*), pairs the most promising mitigation strategies with the primary causes of the targeted cognitive biases and incorporates them into game-play. Further, we present preliminary results from a game efficacy evaluation suggesting that *Missing* is an effective tool for training cognitive bias recognition and mitigation.

## Keywords

serious games, training, game design, cognitive bias, critical thinking

## INTRODUCTION

The idea that digital games have valuable uses beyond entertainment alone – such as training, education, and promoting social change – is well-accepted. Games designed for purposes beyond pure entertainment are known as “serious games” (Stapleton 2004). As the potential to use digital games as vehicles for training has become apparent, serious games have been deployed across diverse fields for diverse communities of players.

Many of the serious games that have been developed in recent years are designed to teach the player about a particular topic or a concrete skill set. In educational settings, serious games have been incorporated into lesson plans for a variety of academic subjects, such as history (e.g., *Stories from the History of Czechoslovakia*; Šisler et al. 2012), cell biology (e.g., *Virtual Cell*; McLean et al. 2001), and computer programming (e.g., a Real-Time Strategy game developed by Muratet et al. 2009). Other serious games have been developed in a variety of domains (e.g., health, social activism) to educate players about a topic with the intention of promoting behavior change; examples include *Re-Mission*, designed to educate cancer patients about the disease and thereby enhance treatment adherence and side effect management (Beale et al. 2007), and *Green My Place*, designed to teach energy awareness and increase energy saving behavior in players (Cowley et al. 2011). Some serious games teach manual skills that can then be practiced in

the virtual environment. Examples include *Skillmaster*, which teaches mechanics to assemble a car power generator (Woll et al. 2011), and a serious game that familiarizes orthopedic surgical residents with the knee replacement surgery procedure (Sabri et al. 2010).

While many serious games are designed to train concrete concepts or skills, as in the examples above, others promote more abstract learning outcomes; these games are far rarer than games designed to help players acquire basic knowledge on a particular topic (Connolly et al. 2012). For instance, *Operation ARIES!* (Millis et al. 2011) and *Operation ARA* (Halpern et al. 2012) train players' critical thinking and scientific inquiry skills to be used when evaluating scientific research. Another example of a serious game geared toward abstract learning outcomes is a mini-game developed by Grappiolo et al. (2011) to train conflict resolution skills. A third example, *DREAD-ED*, is a multiplayer game developed by Haferkamp et al. (2011) to teach communication and decision-making skills to emergency management personnel.

In the current study, we sought to develop and evaluate a serious game targeting a challenging and abstract training problem: the mitigation of cognitive biases. Cognitive biases are the systematic errors and illogical thought processes to which all humans are prone (Kahneman 2011). Though many social institutions (e.g., the legal system, the medical field, the business world, political spheres) rely on the ability of human decision makers to render balanced and rational judgments, cognitive biases are pervasive and notoriously difficult to mitigate (Croskerry, Singhal, and Mamede 2013; Kahneman 2011). This paper is a follow-on to a previously published paper, which presented the game design and efficacy evaluation of a serious game for the mitigation of three cognitive biases: confirmation bias, the fundamental attribution error, and the bias blind spot (Symborski et al. 2014). For the current study, we sought to replicate these results by developing a serious game to target three different cognitive biases: anchoring bias, the representativeness heuristic, and projection bias (defined below).



In this paper, we describe the game design for *Missing: The Final Secret*, a serious game to teach the recognition and mitigation of anchoring bias, the representativeness heuristic, and projection bias. Given that cognitive biases are deeply ingrained and challenging to mitigate, we sought to maximize the educational potential of the game by incorporating current research and theory on the causes and mitigations of cognitive biases into the game design. The design of *Missing* integrates a “cognitive bias framework,” based on the theory of dual-process systems of reasoning (Kahneman 2011), that relates the target cognitive biases, their causes, and effective bias mitigation techniques. In addition, we present preliminary results from an experiment to assess the game’s efficacy for training the recognition and mitigation of the three biases.

## GAME DESIGN

The serious game *Missing: The Final Secret* is a cross between an interactive storytelling game and an adventure game. Over the course of three episodes, players interact with non-player characters (NPCs) and complete activities as they work toward solving the mystery driving the plot of the story. In each game episode, the player is exposed to bias-invoking situations referred to as “bias vignettes,” during which the cognitive biases demonstrated by the player are measured. After the conclusion of each episode, an After Action Review (AAR) provides instruction on each of the three target biases, offers feedback on game performance, and provides practice examples for each bias.

In the following sections, the design of the in-game bias vignettes and AARs is described with respect to a cognitive bias framework derived from the literature. An outline of the structure of *Missing*, with specific details as to how the cognitive bias framework was integrated into the game elements, is also provided.

### *Missing* and the Cognitive Bias Framework

The foundation of our game design is based on current research on the

cognitive processes that lead people to commit cognitive biases, based on the theory of dual-process systems of reasoning. This theory asserts that there are two systems of reasoning that we commonly employ when making judgments: System 1 reasoning is characterized by automatic, intuitive, and reactive thinking, while System 2 reasoning is characterized by logical reasoning and rule-governed thinking (Evans 2007; Forster and Liberman 2007; Kahneman 2011; Morewedge and Kahneman 2010). According to the theory, cognitive biases commonly arise when the automatic and intuitive processes of System 1 reasoning lead us to generate faulty conclusions, which the logical, rule-based processes of System 2 reasoning fail to identify and mitigate (Morewedge and Kahneman 2010).

To guide our game design process, we created a cognitive bias framework (see Figure 1, below) that defines the relationship between the three cognitive biases being targeted, their theoretical causes (i.e., automatic System 1 reasoning processes), and mitigation approaches (i.e., logical System 2 reasoning processes). This framework allowed us to design *Missing* such that players would be exposed to the System 1 causes of the target biases during game play, which would then be connected to the most promising System 2 mitigation strategies for each of those causes in the AARs

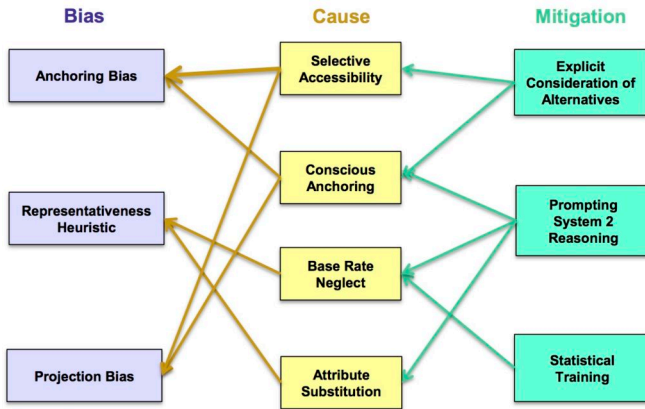


Figure 1: Cognitive bias framework.

Given that there is some overlap with regard to common System 1 causes and potential System 2 mitigation strategies for the three biases (see Figure 1), we were able to develop an efficient game that targets the origins of multiple biases at their common source and allows players to generalize their learning across multiple biases. The following sections define the three target biases and describe the theory-based causes, the theory-based mitigation strategies, and the general structure of the game vignettes for each bias.

### Anchoring Bias

Anchoring bias is the tendency to place excessive weight, or “anchor,” on a single piece of information when making a judgment or decision (Kahneman 2011; Sapadin 2013). For example, in one study, even experienced real estate agents overestimated the value of a home after exposure to an overly high asking price (Northcraft and Neal 1987).

*Theory-Based Cause:* The literature suggests that there are two types of anchoring with two different causes, depending on how the anchor was provided: externally or internally (Epley and Gilovich 2001). When we consider externally provided anchors (i.e., given to us through an

external source such as a price tag, another person, etc.), the **selective accessibility** of information consistent with the anchor is increased. Anchor-consistent information is then given excessive weight when we make subsequent judgments, leading to bias (Mussweiler and Strack 2000). Internally generated anchors impact our judgment when we have prior knowledge on a topic; for example, when asked to guess the freezing point of vodka, most people **consciously anchor** on the freezing point of water (32°F/0°C) and recognize that vodka freezes at a lower temperature than water. However, when searching for the correct answer, most people do not adjust far enough away from the anchor toward the correct answer (Epley and Gilovich 2001).

*Theory-Based Mitigation:* The effects of both selective accessibility and conscious anchoring are reduced when we are asked to think of reasons for rejecting the anchor as an estimate and to **explicitly consider alternatives**. Deliberately considering alternative information to the anchor helps to reduce the biasing effects of the anchor (Chapman and Johnson 1999). In addition, the conscious anchoring that occurs with internally generated anchors can be reduced by prompting the logical processes of **System 2 reasoning** (Epley and Gilovich 2006; Simmons, LeBoeuf, and Nelson 2010).

*Anchoring Bias Game Vignettes:* This bias is elicited during the game by asking the player questions related to the game narrative and requiring the player to respond with numerical answers. For externally provided anchors, an anchor value is provided explicitly in the question or as part of the game dialog immediately preceding the question. The extent to which the player was influenced by the anchor is determined by comparing the player's answer to the provided anchor. As a lesson for mitigation, players are guided to recognize when an anchor is present, to determine the direction in which to adjust their answer away from the anchor, and to adjust further away from the anchor than they think they should. Players are also guided to consider additional information beyond the anchor that might be relevant when making their judgment.

## Representativeness Heuristic

The representativeness heuristic is not a unitary construct; rather, it is comprised of multiple bias facets (Tversky and Kahneman 1974). In essence, the representativeness heuristic boils down to relying on appearances or what “seems right” to make judgments, while neglecting to take relevant principles of statistics and probability into account (Kahneman 2011). *Missing* covers the five facets of the representativeness heuristic described in Table 1.

Facet	Definition
Conjunction fallacy	Faulty assumption that two events occurring together is more likely than either event occurring individually
Base rate neglect	Tendency to ignore general base rate information while overly focusing on details of a specific situation or case
Gambler's fallacy	Failure to recognize that random events are independent (e.g., expecting a coin to land on heads after landing on tails 10 times in a row)
Perception of randomness	False expectation that all random sequences will “look” random
Sample size neglect	Failure to recognize that large samples provide better evidence than small samples; overconfidence in results from small samples

Table 1: Facets of the representativeness heuristic covered in *Missing*. Sources: Kahneman 2011; Tversky and Kahneman 1974

*Theory-Based Cause:* Research suggests that the representativeness heuristic is the result of the substitution of a similarity judgment (“this seems right”) for a probability judgment, known as **attribute substitution** (Kahneman and Frederick 2002). This often entails a **neglect of base rates** or probability information (Kahneman and Tversky 1972).

*Theory-Based Mitigation:* Prompting logical, rule-based **System 2 reasoning** can help to reduce attribute substitution and base rate neglect and, therefore, is effective in mitigating errors in thinking resulting from the representativeness heuristic. In addition, research indicates that people with formal statistical training are less affected by the representativeness heuristic; providing **statistical training** should help to increase attentiveness to base rates and probability information (Tversky and Kahneman 2002).

*Representativeness Heuristic Game Vignettes:* The game elicits the representativeness heuristic by having players make judgments about in-game characters and probabilities. For example, in one vignette, the player is asked to speculate about the presumed nefarious activities of the nemesis in the game, Arthur Flaherty, by selecting which activity(ies) Arthur is likely involved in from a list provided. Players judging it more likely that Arthur is involved in a conjunction of two activities than in any one of the constituent activities will have committed the conjunction fallacy. Additional vignettes cover the other four of the five aforementioned representativeness heuristic facets (see Table 1). In the AAR, basic statistical instruction about the conjunction of multiple events, base rates, randomness of events, and sample sizes is provided.

#### Projection Bias

Projection bias is the tendency to overestimate the extent to which others share our own emotional states, characteristics, thoughts, and values (Epley et al. 2004). *Missing* covers two primary forms of projection bias: the false consensus effect (Ross, Greene, and House 1977) and attributive similarity (Human and Biesanz 2011). The false consensus effect occurs when we assume that more people share our beliefs than actually do (Ross, Greene, and House 1977). Attributive similarity occurs when we overestimate the extent to which others are likely to share our traits or characteristics (Human and Biesanz 2011).

*Theory-Based Cause:* Projection bias stems from **consciously anchoring** on our own emotional states, thoughts, and values when evaluating the emotional states, thoughts, and values of others (Epley et al. 2004). This leads to an increase in the **selective accessibility** of information consistent with our own perspective and the overweighting of that information when making a judgment about others' views (Epley et al. 2004).

*Theory-Based Mitigation:* **Explicit consideration of alternatives** – in other words, deliberately considering alternative points of view or attempting to put oneself “in someone else’s shoes” – can help to reduce

projection bias, along with activating logical **System 2 reasoning** processes (Epley, Morewedge, and Keysar 2004; Van Boven and Loewenstein 2003).

*Projection Bias Game Vignettes:* The false consensus effect is elicited in-game by asking the player to indicate his/her view on a particular topic (e.g., prefers cats versus prefers dogs). The player is then asked to estimate the percentage of people who agree with his/her opinion. Overestimating this percentage suggests the presence of projection bias. The attributive similarity bias vignettes share a similar format, except that players respond to questions on a continuous Likert scale and then estimate how the average person would respond to the question using the same scale. Answering that the average person would answer identically or very similarly to oneself suggests the presence of projection bias.

### The Game Design of *Missing* and Theoretical Underpinnings

The bias framework and theory-based mitigation techniques are incorporated directly into game-play through the four major instructive phases of the game: cognitive bias elicitation, bias measurement, participant feedback, and cognitive reinforcement. These steps are repeated multiple times in a given episode for each of the three game episodes, offering repeat learning experiences for the target biases. Table 2 provides an overview of each of the four instructive phases in *Missing* and specifies during which game segment the phase occurs (episode versus AAR).

Instructive Phase	Game Segment	Description
[1] Cognitive bias elicitation	Episode	Player is presented with a naturalistic scenario designed to elicit a target bias
[2] Bias measurement	--	Game analyzes player actions behind the scenes to determine if a bias has been exhibited
[3] Participant feedback	AAR	Player is provided with instruction and feedback as to whether (s)he demonstrated or avoided the biases presented during the episode
[4] Cognitive reinforcement	AAR	Player's understanding of the biases is reinforced by offering additional interactive examples where the player can practice mitigation techniques provided during the feedback stage

Table 2: The four major instructive phases in *Missing*.

In the sub-sections that follow, the structure of *Missing* will be described with respect to the bias framework and the four instructional phases defined in Table 2.

### Opening Video

The player is drawn into the game through a brief video that presents the highlights of the first game in the *Missing* series (Symborski et al. 2014). Through a conversation between two unseen characters and a montage of animations, the player is provided with a recapitulation of the first game’s adventures. The player is then informed that, following these adventures, (s)he and Terry have joined forces to create a hot news blog: *Manhattan Azimuth*. As the game opens, Terry and the player are celebrating the 1,000,000th hit on their blog.

In the opening video and throughout the game, an interactive narrative storyline is a key element of *Missing* (see Figure 2). A well-crafted storyline that draws the player into the game promotes player engagement and feelings of immersion (“presence”) while maximizing the entertainment value of the game (McDaniel, Fiore, and Nicholson 2010).

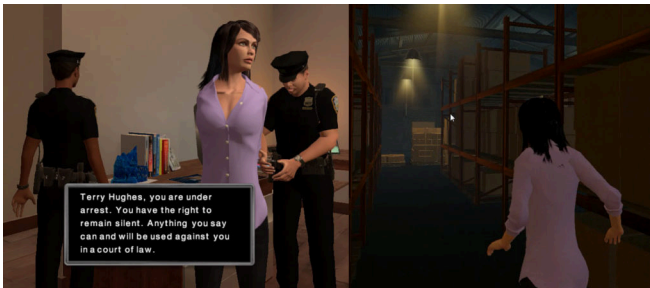


Figure 2: Terry finds herself in trouble with the law (left); Terry and player sneak into a warehouse (right)

### Episodes

*Missing* is composed of three episodes, each of which is followed by an AAR (described in the following section). The episodes are sequential



and present the story to the player, from exposition to denouement. Each episode is punctuated with three to four bias vignettes that are woven into the plot of the story. In order to illustrate the format of an episode of *Missing*, several highlights of Episode 1 are described below.

In the opening of Episode 1, Terry and the player are celebrating the 1,000,000th hit on their news blog, *Manhattan Azimuth*, and plotting how best to expand their success. In the context of this conversation, the first bias vignette arises (**[Phase 1] Cognitive bias elicitation**). Terry is considering the relative merits of developing a Facebook application to help market their news blog. Terry remarks that Facebook apps seem to be popular and that she spends around 30 hours per month browsing Facebook on her cell phone. In order to gauge whether or not a *Manhattan Azimuth* Facebook app would be a valuable investment of time and money, Terry asks the player to estimate the following: first, whether the average mobile Facebook user spends more or less than 30 hours per month looking at Facebook on his/her phone, and second, about how many hours the average mobile Facebook user spends browsing Facebook on his/her phone (see Figure 3).

This is an example of an anchoring bias vignette. In this case, the externally provided anchor is Terry's 30-hour estimate of the time she spends on mobile Facebook each month. The player is first prompted to answer whether (s)he thinks that the average mobile Facebook user spends more or less than 30 hours a month on the app, increasing the **selective accessibility** of the anchor to the player and establishing which direction the player will be adjusting from the anchor (i.e., higher or lower than the anchor). The player is then asked to estimate the number of hours the average user spends on mobile Facebook in a month. By analyzing the player's response relative to the anchor value (30 hours per month) and to the correct answer (11 hours per month; Sternberg 2013), the player's anchoring bias can be assessed by the game mechanics (**[Phase 2] Bias measurement**). The closer the player's answer has been "pulled" toward the anchor of 30 hours and away from the correct answer, the more anchoring bias the player has demonstrated; the closer the player's

answer is to the true value of 11 hours, the less anchoring bias the player has demonstrated. The player's measured bias serves as the basis for the feedback that the player will receive during the AAR for Episode 1.



*Figure 3: Player estimates the number of hours the average user spends on mobile Facebook in a month*

Episode 1 also includes two bias vignettes for the representativeness heuristic. In one of these vignettes, Terry and the player discuss the presumed nefarious activities of their nemesis, Arthur Flaherty. In the other vignette, Mike, the quirky building superintendent, draws the player into a game he likes to play to pass the time: pondering the nature of those who live in the building. This time, Mike is wondering which gym the new building tenant will join. There are three fitness options within range of the apartment building: Rocky's Gym is the cheap, no-frills option within a five-minute walk from the apartment; Entropy is an upscale, spa-like facility around 10 minutes from the building; and there's always the option of staying at home on the couch watching television. According to Mike, 70% of the tenants go to Rocky's Gym, 10% go to Entropy, and 20% stay home and watch TV. Mike has observed that Mary, the new tenant, is classy, well-dressed, and an avid museum-goer,

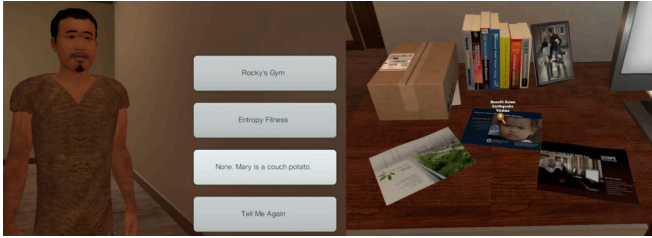
and queries the player as to which fitness option (s)he expects Mary to select (**[Phase 1] Cognitive bias elicitation**).

If the player is engaging in **attribute substitution**, (s)he might rely on the description of Mary's qualities (classy, cultured, stylish) to make this judgment, while **neglecting the base rate** information provided. The player's bias is measured as a function of the fitness program the player assumes that Mary would select: Rocky's, Entropy, or the couch (**[Phase 2] Bias measurement**; see Figure 4). While the player might assume that Mary will sign up for Entropy, the upscale gym option that seems more congruent with her personality, this choice neglects to consider the base rate information that Mike provided: 70% of the tenants exercise at Rocky's, whereas only 10% go to Entropy; thus, Mary is more likely to sign up at Rocky's, from a probabilistic perspective. In the AAR for Episode 1, the player is given feedback to this effect.

Finally, Episode 1 contains a projection bias vignette. In pursuit of generating content for their news blog, Terry and the player consider what event they should cover in the upcoming week. Terry directs the player to a set of invitations for different charity events (see Figure 4), one of which is a fundraiser for "Friends of a Green New York." After some deliberation, Terry asserts that she is leaning toward this invitation, and asks the player whether (s)he approves or disapproves of the government's spending on parks and recreation. After the player has answered, Terry asks the player to estimate what percentage of Americans agree with the player's opinion on the issue (**[Phase 1] Cognitive bias elicitation**).

This vignette is designed to elicit the false consensus effect. Players impacted by projection bias are likely to **consciously anchor** on their own opinion on government spending on parks and recreation in this situation, increasing the **selective accessibility** of information consistent with their views. To assess player bias, the player's estimate of the percentage of others who share their views is compared to the actual percentage of Americans who also approve or disapprove of government

spending on parks and recreation, based on polling data (**[Phase 2] Bias measurement**). Overestimating the percentage of others who share one's views on an issue is indicative of projection bias, which is discussed with the player during the feedback sections of the AARs.



*Figure 4: Player guesses which gym Mary attends (left); Player inspects invitations to charity functions (right)*

#### After Action Reviews (AARs)

The AARs are composed of three main parts: defining the biases or bias facets, providing the player with feedback, and reinforcing the player's learning with practice examples. Thus, for each bias vignette in the game, there is a corresponding segment in the AAR during which the bias is defined (if it has not been defined already), feedback specific to that bias vignette is given, and the player is given practice examples of a similar format to the bias vignette.

During AAR 1, before players are provided with feedback or practice examples for any of the biases, each bias (anchoring, representativeness, and projection) is defined in a brief, two- to three-minute video of a subject matter expert explaining the bias in simple terms. Further, brief explanations of each of the facets of the representativeness heuristic appear throughout the AARs for Episodes 1, 2, and 3, before feedback for the bias vignettes corresponding to those facets is given.

Along with basic definitions of the biases, the AARs provide feedback for each of the bias vignettes in the game. For a given bias vignette, the AAR segment begins with a flashback video clip that reminds the

player of the bias-eliciting situation in the game. The player's response to the situation is then highlighted and feedback is given as to whether or not his/her answer demonstrated bias (**[Phase 3] Participant feedback**). Research in the field of education has consistently found that feedback is beneficial for learning (Hattie and Timperley 2007). Based on recommendations from the literature, the feedback provided by the game was created with the following features: it is tailored to the player's performance (i.e., it specifically addresses the player's answer to the question, whether correct or incorrect); it is comprehensive yet brief, to avoid placing excessive cognitive load on the player and to remain manageable; and it is designed to address the player's misperceptions and incorrect answers, while respecting the player's self-esteem and attempting to avoid making him/her feel threatened or defensive (Hattie and Timperley 2007; Race n.d.). Specifically, while the feedback attributes unbiased/correct answers to the player ("Great job! You avoided bias..."), biased/incorrect answers are separated from the player and addressed tactfully ("*Your answer* [versus the player him/herself] *might* [versus a more definitive and condemning verb] have demonstrated bias..."). After providing feedback to the player, bias-specific mitigation strategies (i.e., **explicit consideration of alternatives**, **prompting System 2 reasoning**, and **statistical training**) are provided.

After the player has received feedback and instruction on mitigation strategies, one or more practice examples is/are presented. The practice examples mirror the format of the in-game bias vignettes, and players are given tailored feedback immediately after answering (**[Phase 4] Cognitive reinforcement**). The importance of practice for learning and improved performance has long been recognized (e.g., Ericsson, Krampe, and Tesch-Romer 1993); further, presenting multiple analogous examples allows the learner to generate a problem-solving schema that is more likely to generalize to other contexts in the future (Gick and Holyoak 1980).

## Method and Results of Game Efficacy Evaluation

In order to evaluate whether *Missing* was effective at training the recognition and mitigation of cognitive biases, we conducted a test campaign wherein participants were assigned either to play the game or to watch an educational control video on cognitive bias. Assigning participants to a game or control condition allowed us to compare the knowledge transfer from the game relative to a more traditional method of teaching about cognitive biases (i.e., an educational video). The study consisted of a pretest, exposure to the game or the video, an immediate posttest, and a follow-up test 12 weeks later to assess longitudinal retention of bias knowledge and mitigation. Use of a 12-week longitudinal period was an increase from the eight-week period used in our previous study (Symborski et al. 2014), to further investigate knowledge retention over time.

### Method

#### Participants

Participants were recruited via the Center for Behavioral Decision Research (CBDR) website, operated by Carnegie Mellon University in Pittsburgh, Pennsylvania. Recruitment was open to the general public; however, the sample consisted primarily of students from nearby universities. A total of 238 participants were recruited; 156 were assigned to the game/experimental condition and 82 were assigned to the video/control condition. Of these, 126 of the participants in the game condition (80.8% retention) and 66 of the participants in the video condition (80.5% retention) completed the follow-up test 12 weeks later.

#### Materials and Procedure

A standardized measure of cognitive bias knowledge and mitigation was developed jointly by a MITRE-led team consisting of researchers from Leidos, Applied Research Associates (ARA), and the University of Albany. The bias assessment instrument was composed of two sections, one on the recognition and discrimination of the three target biases

and one on bias mitigation. Three different forms were developed to be administered as pre-, post-, or follow-up tests in counterbalanced order.

Materials for the experiment included the bias assessment instrument; copies of *Missing*, loaded onto computers that met the minimum specification to run the game (Intel® Core™ i7 processor; Windows 7 operating system; 4 GB Dual Channel DDR3 SDRAM 1333 MHz or greater memory; 1 GB on board DDR3 RAM video card); and the control video. The control video was a professionally produced, engaging video that taught recognition and mitigation of anchoring bias, the representativeness heuristic, and projection bias.

During testing, participants would arrive at the CBDR lab site. They would then be randomly assigned to the game or video condition and to a pretest form. After taking the pretest, the participant would either play the game or watch the video, which was followed by completion of the posttest. Participants received an email with a personalized link to the follow-up test 12 weeks after the study date and were given a week to complete it.

## Results

As in our previous study (Symborski et al. 2014), our analysis of the data was guided by three primary research questions. First, was the game effective in teaching the recognition of and discrimination between the three target biases, and was this training effect retained over time? Second, was the game effective in training the mitigation of cognitive biases, and was this training effect retained over time? Finally, was the game a more effective training tool than an educational video?

We evaluated these research questions using *t*-tests to assess the statistical significance of the differences in the pretest to posttest scores, pretest to follow-up test scores, and results for the game versus the video at posttest and at follow-up. In addition, we report Cohen's *d* as a measure of effect size (Cohen 1992). As a standard guideline for interpretation

of effect sizes, Cohen (1992) suggested that  $d = 0.2$  could be considered small,  $d = 0.5$  could be considered medium, and  $d = 0.8$  could be considered a large effect size.

#### Game Efficacy: Training Recognition and Discrimination of Target Biases

Participants' ability to accurately match the selected biases to their definitions (recognition) and to differentiate the biases from one another when given a scenario and asked which bias the scenario represented (discrimination) was measured via the bias assessment instrument at pretest, at immediate posttest, and at 12-week follow-up. There was a statistically significant improvement in participants' bias recognition and discrimination from pretest to posttest ( $t(155) = 17.75, p < .001$ ). This improvement in recognition and discrimination of biases at immediate posttest corresponded to a large effect size ( $d = 1.43$ ). Following the 12-week longitudinal period, the improvement over pretest scores at follow-up remained statistically significant ( $t(125) = 7.33, p < .001$ ); though the effect size decreased, as would be expected, it remained medium to large in magnitude ( $d = 0.66$ ).

#### Game Efficacy: Training Mitigation of Target Biases

Participants' ability to mitigate (i.e., avoid committing) the target biases at pretest, at immediate posttest, and at 12-week follow-up was assessed. Participants demonstrated statistically significant improvement in bias mitigation capability (i.e., committed biases *less* often) from pretest to immediate posttest ( $t(155) = 21.76, p < .001$ ). The effect size,  $d = 1.75$ , exceeded the threshold for a large effect size. After the 12-week longitudinal period, improvement in bias mitigation capability remained statistically significant and the effect size remained large ( $t(125) = 13.04, p < .001; d = 1.17$ ).

#### Game vs. Educational Video Comparison

Finally, the game's efficacy was compared to that of an educational video for training the mitigation of cognitive biases. At immediate posttest,



*Missing* was significantly more effective for teaching the mitigation of cognitive biases than the educational control video ( $t(235) = 3.67, p < .001; d = 0.24$ ). After the 12-week longitudinal period, this effect remained marginally significant ( $t(189) = 1.91, p = .057; d = 0.14$ ).

Taken together, these results suggest that *Missing: The Final Secret* is an effective teaching tool for the recognition and mitigation of cognitive biases. Further, the results of this version of the game are similar to our previous version that addressed three *different* cognitive biases (Symborski et al. 2014). Both games had a positive training effect, immediately after training and longitudinally. In addition, both *Missing* games outperformed educational control videos in training cognitive bias mitigation, which lends support to the idea that serious games may be more effective for training than standard approaches such as educational videos or lectures.

## Conclusion

Cognitive biases arise from human instincts and intuitions that are deeply ingrained and difficult to alter. The challenge faced by the present study was to utilize a serious game approach to make people aware of cognitive biases and to provide training to reduce the occurrence of these biases; in other words, to create a change in thinking, actions, and attitudes of the game player – a common challenge when creating serious “games for change” to leverage game mechanics for social benefit.

Our approach to creating the game *Missing* was to guide the game design using current literature on cognitive biases, which provided theoretical bias causes and mitigation strategies. As the foundation of our game design, we paired the most promising mitigation strategies with the primary causes of the cognitive biases to create the described bias framework. These concepts were incorporated into specific game mechanics and story narrative. The game episodes were designed to expose the player to the causes of the biases, and then to teach mitigation strategies during the feedback sections between game episodes. This gives players

a chance to absorb these strategies and practice them in subsequent game episodes.

Three cognitive biases were selected as targets for mitigation: anchoring bias, the representativeness heuristic, and projection bias. An experiment was conducted and the effects of *Missing* on bias recognition/discrimination and mitigation were measured. The immediate effect of *Missing* on bias *knowledge* was large at  $d = 1.43$ . The immediate effect of *Missing* on bias *mitigation* was also positive at  $d = 1.75$ . Both results are encouraging. Some decay in learning results was expected and observed regarding the effects of *Missing* on both bias knowledge and bias mitigation when measured 12 weeks after game play. Bias knowledge improvement reduced to  $d = 0.66$  and mitigation improvement reduced to  $d = 1.17$ . However, these results remain statistically significant compared to baseline scores and suggests that the knowledge gained by playing *Missing* is internalized and retained.

In conclusion, the training results described above suggest that using relevant theory to guide the game design process is a promising approach for building serious games that teach abstract topics. Future research may seek to validate this design approach across diverse topic areas for diverse communities of players.

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# The Role of Gaming Platforms in Young Males' Trajectories of Technical Expertise

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## ABSTRACT

Studies of gender in videogame culture have often suggested that games provide a source of informal learning about technology, and that the perceived masculinity of the medium means that this benefit goes mainly to boys. The author's research interrogates and expands upon this "techno-socialization" theory of games. This paper presents a case-study based on interviews with male students (n = 18) studying ICT (Information and Communications Technology) in the UK, and illustrates the complexity of relationships between gaming and their interest (or indifference) toward computing careers.

## KEYWORDS

informal learning, platform studies, biographical research, youth game making

## INTRODUCTION

Much of the existing literature on gaming and gender has suggested a connection between gaming and enthusiasm toward computing careers (Wajcman, 1991; Cassell and Jenkins, 2000; de Castell & Jenson, 2004; 2007; 2008; Kerr, 2003; Beavis & Charles, 2007; Carter, 2006). More recently, similar cases have been made for studying the gaming habits of young men who fall outside of the typically white, middle-class “geek” stereotype, and how gaming habits might affect their interest in Computer Science (DiSalvo & Bruckman, 2010). I refer to this body of research as holding a *techno-socialization* theory of games; viewing games as tools for the acquisition of skills and attitudes associated with computing careers, as well as for the construction of individuals’ relationships with technology more broadly.

The idea that leisure uses of computers might shape individual career trajectories also feeds into broader conversations about “digital divide(s)” or how society may be becoming stratified based on patterns of technological ownership, access and use (Warschauer, 2004; Van Dijk, 2006). What might seem like natural talent in an educational setting may often be the result of what Goode and colleagues (2012, p. 48) term “preparatory privilege”; the result of a domestic head start with computers. Researchers of computing education in the US contend that young people from affluent households – or at least the children of more technically literate parents – tend to receive this type of advantage (Ching *et al*, 2005; Seiter, 2007; Good *et al*, 2012).

What I hope to illustrate is that, although there is a clear connection between the male-domination of computing careers and parts of gaming culture, we need to be careful to differentiate when gaming does and

does not provide a tangible bridge into careers. Post-compulsory study in computer-specific fields is unpopular *across genders* in Germany, the UK and the US, despite being more popular among boys (Schulte and Knobelsdorf, 2007; DiSalvo and Bruckman, 2009; Department for Education, 2011; 2013). In the UK this has often been attributed to a “boring” curriculum focussing on use of office software (Fuller *et al*, 2009; Royal Society, 2010). Students may disengage from courses because their own informal learning surpasses what is on offer at school (Carter, 2006). General claims about “videogames” or even “male-centric gaming culture” may neglect pertinent differences between gaming platforms and the cultures which arise around them. As DiSalvo and Bruckman (2009) argue, low uptake of Computer Science courses suggests that perhaps boys are not receiving as much of a benefit from gaming as previously thought.

Based on a series of semi-structured interviews in post-16 ICT classes at two UK schools (following four years of the author working as a teaching assistant in the subject) this paper illustrates how some boys consciously link their interest in IT careers to their histories of gaming. These connections are made in ways which are often heavily dependent on parental involvement and upon the types of gaming platforms available at home.

### Games as Technological Socialization: A Theory of Learning Through Leisure

The arrival of the home videogame is a key moment in the “genderizing” of human-computer interactions (Cassell, 2002). In the US, female enrolment in Computer Science degrees began to drop in the mid 1980s as computers and consoles entered American homes, usually marketed as “toys for boys” (Henn, 2014) with no similar drop-off in female enrolment in Medicine, Law and Physical Sciences degrees. Computing was gradually “masculinised”, through boys dominating informal learning spaces and being the initial target market for games and hobbyist magazines (Haddon, 1990; Wajcman, 1991, Lubar, 1998).

Microcomputers of the 1980s saw young players of games begin to make their own using the BASIC language (Fifre-Shaw et al 1985; Mohamedali et al, 1987; Veraart, 2011; Saarikoski & Suominen, 2009; Švelch, 2013; Swallowell, 2008; Swallowell, 2012). These machines remained popular for longer in Europe and the UK (Loguidice and Barton, 2014, p. 138) leading to a geographically-specific generation of “bedroom coders” who went on to work in industry. In the 1990s, personal computers became more modular, and hobbyist scenes shifted from an emphasis on making whole games, to modifying parts of existing ones (Au, 2002; Kücklich, 2005; Seif El-Nasr & Smith, 2006; Hayes, 2008) and the assembly of high-end gaming machines (Simon, 2007). However, literacy expert Elisabeth Hayes suggests the following:

“We have little specific or systematic documentation of individual players’ trajectories of learning and development of expertise – which games are more likely to trigger such learning, which players engage in such practices, or what conditions seem to be important in supporting this trajectory of expertise.” (Hayes, 2008, p. 222)

Hayes went on to survey high-school pupils, concluding (p. 224) that most games enjoyed by school-age girls do not have the same “affordances for technology-related learning” (such as modding). DiSalvo and Bruckman (2009, p. 276) conducted similar research with undergraduates, arguing that the theory of games as techno-socialization is troubled by continually falling enrolment in Computer Science. They suggest that the special connection between gaming and Computer Science has eroded as gaming became more integrated into mainstream culture. Like Hayes, they recommend a closer investigation into the specifics of any gaming–computing relationship which does exist at the present time.

## Players and Platforms

Platform differentiation is important here because it is predominantly PC gaming which supports the types of hobbyism which might lead to a deeper interest in computing (Seif El-Nasr and Smith, 2006, Beavis & Charles, 2007; Hayes, 2008). Laurie Taylor (2007, p. 223) has argued

that the interplay between gaming platforms and the communities which arise around them is often overlooked. The “platform studies” perspective takes a social constructivist approach to technology, asserting that society and technology affect each other mutually (Bogost and Montford, 2009) but research in the techno-socialization literature has rarely foregrounded platforms themselves.

Hardware and software platforms limit or constrain the end experience in ways which attract particular groups of players. Many game genres are PC-specific (MMOs, MOBAs, RTS) partly due to differences in user-input, but also to the comparatively late entry of consoles into online gaming. Gee notes that the control schema of the PC attracts some while repelling others and that “these matters are connected to their identities as game players” (2003, p. 34). One fruitful way to describe and analyse these intersections of identity with technological use and aptitude is Dovey and Kennedy’s use of “technicity” (Dovey and Kenney, 2006). The concept of technicity lets us consider not just types of players but also how these relate to technology more generally, in this case, due to their association with specific platforms and what that might mean in terms of their other values.

Generally, the difference between consoles and PCs can be described in terms of openness; both in relation to the physicality of the hardware and the design of the relevant operating system. Consoles have traditionally been closed systems, built to run proprietary software sanctioned by the console manufacturer (Kerr, 2006) and, more recently, other entertainment media. In contrast, PCs are multi-purpose open systems; players have more opportunities to alter or create game content, and the machines themselves tend to be assembled and upgraded piecemeal. Mainstream console manufacturers have tended to hide away their machines’ inner workings in order to minimize technical barriers to entry, thus allowing for the largest possible target market. As a result, those involved in PC-specific gaming cultures often express pride in their own gaming activities being in some way more creative or technical (Simon, 2007).

The PC is associated with technological innovations such as online play (Kierriemuir, 2006) but has historically been a comparatively small niche within digital games. Writing in 2006, Kerr noted that console games made up the majority of total software sales (p. 39) while the 2012 *Oxford Handbook of the Digital Economy* (Lee, p. 85) cites PC games as less than 5% of total gaming software revenues. PC-gaming network Steam had 65 million accounts in late 2013, compared to 110 million on PlayStation Network and 48 million on Xbox Live (Prasuethsut, 2013). Nintendo platforms sold the most software units for the 2006-2011 period, while the PC ranked lowest on sales-by-platform (Babb and Terry, 2013, p. 40). Attempts to compare the cost of similarly powered consoles and PCs often to inflate console prices by including the television cost; despite the fact that most people own televisions prior to consoles.

Socioeconomic status can determine not only access to gaming technology but also how is perceived. Itō (2009, p. 35) has suggested that young people's engagement with games is mediated by parental attitudes to technology; with middle-class parents more likely to champion personal computers as educational while negatively associating consoles with "couch potato" televisual culture. One British study of 1,287 6-17 year olds found working-class families more likely to own a games console (Livingstone, 2002). DiSalvo and Bruckman (2010) found the young African-American men in their study did not see playing an MMO as a "social" experience as long-term fans might, due to having no access to or interest in gaming PCs, while Andrews' (2008, p. 206) survey of 195 American high school students found that those from high socioeconomic backgrounds were more likely to report a general interest in gaming, and to prefer PCs over consoles. Andrews characterises this is a type of digital divide, exacerbated by the relative quality of Internet connections and perhaps "discomfort with keyboard-based interfaces" among lower-socioeconomic-status students (p. 209).

**Method and Sample: Thematic Interviews with Teenage ICT**

## Students

The interviewees contacted for this research were a mixed sample of adult IT professionals [n = 21] and young people studying ICT<sup>1</sup> as an elective, post-compulsory subject [n = 19], although this paper focuses on the latter. Semi-structured interviews were used to obtain “technicity biographies” – narrative accounts of growing up with (and becoming interested in) technologies. These stories tended to revolve around turning points and transitions, narratives of “becoming” a certain type of person. The younger sample was predominantly (like the researcher) male and white British, with only one female student in one of the two classes visited (she was interviewed but did not fall into either of the two main categories discussed later). One of the boys was black British and three had originated from countries in Eastern Europe in the previous four to six years. Although no data was collected to describe the social class of respondents, both schools had catchment zones falling in the top quartile for socioeconomic deprivation according the 2010 Index of Multiple Deprivation (Open Data Communities, 2014). Contrasts with groups from more affluent areas would be useful (but cannot be made at the present time).

Opening questions related to the respondents’ present work or studentship (e.g. “why did you choose to study IT?”). I would then request a personal history of interactions with computers, seeking to identify conditions of access (e.g. whether respondents had sole access to home computers) and the role of gate-keeping individuals (such as family members and/or peers). Although I did have a “checklist of questions” (Merrill and West, 2009, p. 119) I generally aimed to take a “non-directive” approach, allowing the interviewee to talk “at length in his or her own terms” (Atkinson and Hammersly, 2007, p. 101) with minimal prompts.

Biographical research offers two types of data; the events themselves, and the telling of those events. Exaggerations or omissions need not

1. In the UK, Information and Communications Technology is a less “technical” subject area than Computer Science, but relatively few schools offer the latter.



be problematic, when regarded as a type of data in their own right. From a sociological perspective, Jedlowski (2001) and Marotzki (2004) both emphasize biographical data as a way of understanding how subjects process their experiences. I generally found that older and more confident respondents were happier to tell their life story with fewer prompts, meaning I had to employ my “checklist of questions” more frequently for the younger students. The teenagers were less likely (or able) to offer accounts pre-dating their own adolescence, and this was perhaps compounded by the fact that, due to time pressure, some of these interviews were conducted in friendship pairs. The younger students, therefore, produced accounts which were not as typically “biographical”, but which still offered an insight into the nuances of the phenomena being described. Conducting some interviews in pairs, it turned out, became a way to observe performative behaviour/speech among peers; for example, one student might tell me that they “only” play one particular platform, and then another would correct them and say “but you have console x”. This highlighted contradictions between the play practices which they really engaged in, and how they wanted to present their player identities. The importance of identifying performative answers to questions of player tastes has been highlighted in several previous studies (Carr, 2005; Jenson and de Castell, 2008; DeVane and Squire, 2008).

Most of what has been discussed in the paper thus far leads toward the hypothesis that “individual players’ trajectories of learning” (Hayes, 2008, p. 222) are heavily dependent on the platforms upon which they play, due to the design of the personal computer offering more opportunities for “incidental” learning; learning which occurs as a “by-product of some other activity” (Marsick and Watkins, 1990, p. 8). However, to avoid skewing answers toward this area, I applied one general “rule” throughout these interviews; I would avoid asking questions about gaming unless the respondents themselves raised the topic (which most eventually did). This is in accordance with Taylor and Bogdan’s advice about being “truthful but vague” (1984, p. 25) with regards to divulging the research agenda to participants, in order to avoid skewing responses.

## Orientations to ICT (and to Gaming)

Interviews were analysed and emergent themes noted. Similar experiences or ways of speaking about careers and leisure activities related to the school subject (ICT) were grouped, and three categories appeared to emerge. These represented different orientations; different levels of “seriousness” in their perception of technology and its uses; different types of *technicity*. These categories are reductive and simplistic, and some young people move between them as they speak; but they provide a way of understanding the home-school dynamics at work. These were:

- The “means to an end” orientation
- The “console gaming enthusiasts”
- The “PC gamer/tinkerers”

The “means to an end” orientation described around half of the group; young people whose interest in computers was tangential to some other goal. For them, IT is a general employability skill for fields such as business or policing, or for applications such as graphic, web or product design. Their career interests involved the computer as a tool, but computers themselves were not the primary focus. No obvious pattern could be observed about the gaming habits of this group, except that it was diverse (ranging from *FIFA* to *World of Warcraft*) and tended not to be something they spoke about early on in the conversations.

In comparison, the other two groups – the “console gaming enthusiasts” and the “PC gamer/tinkerers” – foregrounded gaming when describing their interest in computers. It is these two groups who will be the focus of the remainder of this discussion, as they illustrate two different types of relationship between gaming and computing interest.

### The Console Gaming Enthusiasts

This group played almost exclusively on consoles, although many owned

laptops primarily for homework, social media, films and music etc. The term “console gaming enthusiasts” describes both their preferred play platform *and* their stated career goals. For the majority of the class, Xbox360 gaming was an important form of social interaction outside of school during evenings and weekends. Most members of this group cited game development as a career aspiration, but had very little experience of actually making games at any level. Their teacher had introduced them to *Scratch* and *Java*, but despite their stated career goal, only one had installed any game-making software at home. Their interest in games seemed to directly inform their choice of ICT as a subject, but this had not extended over into their home-lives, and I was uncertain as to whether “game developer” was simply a cool job to express an interest in, with elements of peer-pressure in these responses.

This apparent lack of hobbyist game-making at home stood in direct contrast to the biographies I had gathered from adult IT workers; four of whom had been developers at a local games company, and had made games outside of school in their teenage years, using a variety of tools including QBasic and Flash. After observing that many game developers had been making games at home before any such opportunity arose at school, it seemed disconcerting that so many of the younger interviewees viewed development jobs as something they could obtain purely through formal education, and with sparse experience prior to university. Take, for example, the following exchange between myself and Craig, one of the console gaming enthusiasts, following his expression of interest in a development career:

**Researcher:** Have you looked into game-making programs or anything like that at home?

**Craig:** Mmm, no. I haven’t really looked into it to be fair. I’ve just like, obviously started looking for universities. And I don’t think I’m gonna get into university. I need two As and they’re all Cs at the moment, so I haven’t really looked into it much.

Even if Craig were to achieve the necessary grades to enter a university

course in game development or computer science, how would he fare in the games job market, alongside hobbyists with the advantage of having programmed since their early teens, and who were in the habit of constant self-tutorage through trial-and-error and internet tutorials?

One student among the console game enthusiasts, Dmitri, had tried using *Unreal Development Kit*, but said that his laptop was not powerful enough to run the software. He had gone on to try *GameMaker* – a 2D game-making tool – but found its codeless drag-and-drop scripting confusing without guidance. Dmitri's story also suggested to me that, unlike those who began hobbyist programming in the 1980s and early 1990s, the graphical standards set by today's games meant he would have to seriously lower his expectations of what was achievable by a single, inexperienced creator. It was rare for any of the boys in this class to make reference to simpler indie games when they spoke about what they played. For those of us working with young people in game-making workshops or classrooms, it is worth considering how first-time creators have to reorient their tastes away from mainstream AAA production values.

Overall, a clear link could be drawn between the console gamers' decision to study IT and their gaming, although it was unclear how exactly their gaming contributed to any sort of useful subject knowledge. In many cases, gaming was one of the first things they mentioned when asked about their job aspirations, although the conducting of pair interviews may have meant that these responses were in some way performative. But while a game development pathway seems attractive to them because it orients around an object of pleasure, most had found only frustration in the actual process of trying to make games. They had yet to develop the sort of challenge-driven, self-determining mind-set I had come to associate with professional programmers and game developers throughout the other parts of my research. It seems fair to say that they had unrealistic expectations of how competitive the industry might be, and the expectations that would be placed on them to constantly update their skills through self-tutorage and experimentation (this was reported

quite widely among my adult interviewees; not only the game developers but by software developers in general).

It would be easy to dismiss expressions of interest in game development as an unattainable dream for teenage gamers who are largely uninformed about the realities of work in the games industry. However, this perspective would be a double standard; we generally do not discourage aspiring young filmmakers or authors from studying Film or Literature on this basis, so why do the same with games? It would also be fair, however, to expect young people aspiring in *any* creative field to have dabbled outside of school, but that did not seem to be the case for this group of young men.

### The PC Gamer/Tinkerers

One of the classrooms I visited was also home to a small group of three boys who, either through parental intervention or personal curiosity, had become computing hobbyists between the ages of ten and sixteen, building gaming PCs or programming small games at home. Their gaming preferences were closely bound up with hobbyist computing, with histories of informal learning mirroring those of the adult IT professionals mentioned earlier.

One boy, Andrei, was described by one peer as the “class expert” on computers; the person they would go to for advice on laptop or PC purchases. While the console gaming enthusiasts only spoke about relatively well-known, recent games, Andrei’s experience of building machines with a parent had exposed him to much older genres of game, something he seemed proud of. The following excerpt is given unabridged, because it illustrates how Andrei’s response to the question “why are you studying ICT” flows so succinctly into his gaming. The excerpt also illustrates how shared knowledge about games can be a “crucial aspect of building rapport” (DeVane and Squire, 2008, p. 270).

- Andrei:** My job interests are, I plan to become a network administrator, which is, administrator of a network. So I thought that picking IT would probably be a first choice. I also have a background in computers, worked with computers with my dad, built a couple of models, played with software, different types of software like Photoshop, uh, programming software like Microsoft Studio and I've used different versions of Windows which dates back to Windows 98 or 95.
- Researcher:** Network administrator is very specific. How did you get interested in computer networking?
- Andrei:** Well gaming, and also just for experimental reasons. We've [Andrei and friend] set up PHP chat clients and networks and stuff.
- Researcher:** So do you have a preference for what you play on? Like console or PC?
- Andrei:** Uh yeah PC is my preference.
- Researcher:** What do you play?
- Andrei:** MMOs like *DC Universe*, wargames like *Planetside 2*. Sometimes I play *Warcraft 3* with other people.
- Researcher:** *Warcraft 3* is quite old now... you seem quite knowledgeable about older games.
- Andrei:** We still play new games, but we have played old games, like I've played the *Ultima* series. Which dates back to almost 2 decades ago.

Andrei stands out among this group because his experience largely mirrors that of the adult IT workers who were interviewed at other stages of the research. For example, one game developer (m/26) gave the following example (using the same series of games) of how his PC gaming related to his identification as a “computer person”: “when you’re ten and you edit the autoexec so you can have a bit more RAM so you can play *Ultima 8* – that sort of thing sticks with you”. Another (m/24) recalled building his first computer, and being proud that it ran *Quake 3 Arena* (id Software, 1999) at the “magic number” of 125 frames per second. These examples have different foci (software vs hardware) but both illustrate how, given the right set of conditions, tasks which

might frustrate most people can become early sources of self-efficacy with regards computers; stepping stones on the transition from being an unconfident “user” of computers toward being a “designer”; a manipulator and builder of systems (Schulte and Knobelsdorf, 2007). Schulte and Knobelsdorf similarly found that games were often highlighted as a favorite initial starting application in the biographical narratives offered by Computer Science majors (p. 34). This is perhaps why the majority of empirical studies of incidental technical learning in gaming culture have tended to focus on computers and not consoles.

Another point about the PC gamer/tinkerer teenagers was that all owned at least one or two of the more popular consoles. Although they foreground the PC as their preference, the peer norm of sociable console gaming meant they had to also have a console in order to be able to play with most of their friends at evenings and weekends. This illustrates a socioeconomic barrier to becoming this sort of PC gamer/tinkerer; a young person would either need to have enough money for both platforms *or* stick to the personal computer and miss out on a lot of social activities. As one student (Eli, m/19) in the “means to an end” category put it:

**Eli:** My friends tend to play more on the consoles... more of their friends are on it, probably online experience is better, you can talk to your friends um, or probably coz they're not used to playing games on a computer ... I don't really think they would get computers just for games, they mainly use them for social networking and to do their work but for gaming, nah I think they would just get a game console really.

It is worth noting that not every young person who played on PCs fitted into this category. One student, as mentioned earlier, played the PC-only *World of Warcraft* but expressed little interest in these aspects of computing, and was primarily interested in football and performing arts. Those in the “tinkerer” category tended to have parents who were either hobbyists themselves, or who at least supported the hobby by providing their

children with resources and encouragement. In contrast, the other students either had low-end laptops, or limited access to shared family computers.

The tinkerers differed from the console gaming enthusiasts in the type of job aspirations they spoke about. Opening questions about job aspirations were met with “network manager”, “IT technician” and “computer programmer”. Unlike the console gaming enthusiasts, these were gamers who did not aspire directly to game development, despite having more tools at their disposal should they have wanted to. Lewis, for example, describes his self-tutorage practices in the following way:

**Lewis:** I chose IT because I wanna go into computer programming, ‘cause I like programming things. I normally do quite a lot at home as well. I’ve been making little games, for about 2 years? Since I was like 14 ... You read webpages and look stuff up; see what people have programmed, get other games, get the programming for the actual game.

Note that “programming” is the dominant theme in this excerpt. As with many of the older IT workers I learn programming. Lewis talks about programming as inherently pleasurable; the coding aspect of game-making is, to him, part of the enjoyment, whereas those who said they wanted to be developers tended to view programming as an irritating hurdle; a chore they had briefly had to wrestle with at school. Schulte and Knobelsdorf (2007) similarly noticed a difference between students, where those unaffiliated with Computer Science were more likely to view such tasks as pleasurable challenges.

As noted earlier, this game-making computer hobbyist orientation coincides with research on 1980s hobbyist scenes, all of which found that making games was as much about improving and evidencing programming skills as it was the games themselves (although it is important to note that this trend may change as newer software for making games without programming become more popular). What appears to be the case, in most of the examples given here, is that the transition between



being an unconfident “user” and a confident “designer” appears to have happened primarily at home, aided not by “gaming” as a general cultural field, but within an ecosystem of activities where PC gaming and hobbyist computing overlap.

### Hobbyist Computing as “Serious” Leisure

The differences noted here between types of player technicity underscore an issue educationalists and sociologists may face when conceiving of “games” or “gaming” in too general a way. Characterizing gaming as a leisure activity invites us to step back and look not at specific instances of play with particular games, but with ongoing interactions with specific platforms, interrogating ways in which those platforms provide or limit opportunities for informal learning.

Scholars within leisure studies have disagreed on what constitutes leisure. Kaplan (1960, pp. 22-25) offered a relatively “common sense” understanding of leisure as an enjoyable and voluntary antithesis to work. Others have warned this “residual” definition of leisure as time “left over” is a false dichotomy which does not accurately describe most people’s experience (Roberts, 2006). Any activity may be subjectively experienced as leisure by participants (Kelly, 1981) and those whose occupations are particularly emotionally absorbing may not differentiate leisure from work (Lewis, 2003; Adib & Guerrier 2003). Rather, these two concepts should be viewed as interrelated, as part of a “life-course framework” (Kelly and Kelly, 1994) which emphasizes how “people develop a form a reciprocity between paid work and their other roles and identities found in their leisure activities” (Best, 2010, p. 43).

Here I have adopted Stebbins’ (1982) concept of “serious leisure” to better describe how the hobbyist relationship manifests in the cases of some of my interviewees, and the type of reciprocity Best identifies between careers and leisure. It could be said that much of the ideology that has arisen around PC gaming cultures comes from a sense of pride in having a stoic attitude, saving up money, carefully building a machine and

learning what every part of it does. This, for Stebbins, is what differentiates normal leisure (entertainment, time-passing etc.) from *serious* leisure, in which participants associate their activities with self-betterment as opposed to pure hedonism. The term describes the subjective seriousness attached to some activities by participants. Such attachments may, however, have material knock-on effects in the form of knowledge acquisition; incidental learning which occurs as a “by-product of some other activity” (Marsick and Watkins, 1990, p. 8).

### SERIOUS LEISURE AND THE ACCUMULATION OF Cultural Capital

This “head start” that some may experience (through PC gaming as serious leisure) is what Pierre Bourdieu (1986) described as the domestic transmission of “cultural capital”; a set of knowledge valued within the dominant culture. With reference to Bourdieu’s work, Seiter (2007) uses an analogy between a piano and a computer to illustrate how knowledge gained informally at home is more “sticky”; becomes embodied and “second nature” to the point that young people with more access to either a piano or computer would appear “naturally” talented at the relevant subject in school. When tasked with high-school essays on Shakespeare, those who have early domestic experience may have a higher degree of comfort with the subject matter, and may even *enjoy* studying it more than many of their peers.

When children are given opportunities to “mess about” with technology without too much fear of reprisal (a privilege which has historically been afforded more often to boys) they develop confidence and learn to teach themselves. We already have a healthy body of work dealing with the part that videogames have played in the gendering of the IT workforce. Social class may also present barriers for young people, not only the economic cost obtaining technologies, but also attitudinal barriers, such as whether they have been socialized to reject solitary studiousness or computer-based labour. The early-years home context is one of the most powerful factors in determining young people’s orientation to computers

(Ching *et al*, 2005; Seiter, 2007) how they see themselves as computer users and whether they identify as a “computer person”. Barron *et al.* (2009) conducted interviews with eight school children and their parents, and identified the ways in which technologically literate parents support their children’s learning. The data explored in the paper further illustrates how parental relationships to some extent configure the young person’s developing technicity; ultimately it is parents who decide which technologies exist in the home and conditions of access and support, all of which affects what young people might “take away” from their gaming.

### When Does Gaming Capital Become Cultural Capital?

Cultural capital was originally a way to theorize how types of knowledge were valued in ways which would award individuals a sort of social maneuverability within the dominant culture. In *The Forms of Capital*, Bourdieu (1986, p. 248) described cultural capital as “convertible, in certain conditions, into economic capital” and something which “may be institutionalized in the form of educational qualifications”. Cultural capital may be objectified or embodied, often in interrelated ways, for example the ownership of a computer (objectified cultural capital) and the knowledge of how to use it in ways valued by the dominant culture (embodied cultural capital). It is impossible to invoke cultural capital within games studies without also dealing with “gaming capital”. Consalvo’s original formulation of gaming capital aims to:

“...capture how being a member of game culture is about more than playing games or even playing them well. It’s being knowledgeable about game releases and secrets... It’s having opinions about which game magazines are better and the best sites for walkthroughs on the Internet”. (Consalvo, 2007, p. 18)

Gaming capital helps us to theorize how different groups of people engage with games in different ways, and how “gamer” may not simply mean “someone who plays games”. Although Consalvo admits that some groups may be disproportionately excluded from the means (or desire) to possess gaming capital (p. 36; p. 124) the effect of social class is left

largely undiscussed. This redirection of Bourdieu's terms toward understanding how one group operates, without reference to the rest of society, goes against Bourdieu's original notion of cultural capital which meant to illustrate:

“...how taste and style preferences have the real concrete consequence of installing and reproducing social hierarchies on the basis of differences in social agents' ability to master the codes of the legitimate culture.” (Jensen, 2006, p. 260)

Jensen wrote this in critique of Thornton's (1995) development of cultural capital into “subcultural capital” along the lines that it disregards Bourdieu's original intention of cultural capital as a means to understand differentiation between social actors based on symbols of social class – a criticism which could also apply to gaming capital. As Seiter (2007, p. 35) argues, even very technical accomplishments by players may not easily convert into paying jobs without “other kinds of material support” such as money and social networks.

It is possible to remarry gaming capital with Bourdieu's class-oriented concept of cultural capital by looking at how particular types of gaming knowledge might relate to the socio-economic conditions of a person's early years, and how these might prefigure whether that person might easily “fit” into the prevailing cultures in a given field. Walsh and Apperly adapt gaming capital into the context of media literacy education, which allows them to evaluate how gaming capital may sit between and alongside Bourdieu's existing forms of capital. They advocate:

“...understanding youths' accumulation and exchange of gaming capital in order to understand how it impacts on other forms of capital, rather than viewing gaming [as] a discrete entertainment oriented part time that has no meaning outside itself.” (Walsh & Apperly, 2009, p. 7)

This paper has aimed to take the approach advocated above by emphasizing the importance of platforms. When an interest in gaming serves as an entry-point to technical careers, it usually does so in platform-specific ways. Personal computers present challenges to accessibility which

are mostly erased in the design of consoles, but these challenges have tended to provide tools for young people to begin feeling confident with computers; to identify themselves as “computer people”, and to become the sorts of people who tell you they want to be technicians or programmers. Open systems which allow for “tinkering”, and a domestic environment that supports such activity, are the link between gaming culture more generally, and the more technical and “serious” leisure practices in hobbyist computing. Accomplishing technical tasks related to games is a way of evidencing a type of technicity. The “PC gamer/tinkerer” is a technicity where overcoming the platform-specific hurdles associated with PC games often leads to that initial identification as a “computer person”, and where types of platform-specific gaming capital can potentially convert into cultural capital in the broader sense.

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# Worldfulness, Role-enrichment & Moving Rituals

Design Ideas for CRPGs

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## ABSTRACT

Roles and rituals are essential for creating, situating and maintaining cultural practices. Computer Role-Playing games (CRPGs) and virtual online worlds that appear to simulate different cultures are well known and highly popular. So it might appear that the roles and rituals of traditional cultures are easily ported to computer games. However, I contend that the meaning behind worlds, rituals and roles are not fully explored in these digital games and virtual worlds and that more needs to be done in order to create *worldfulness*, *moving rituals* and *role enrichment*. I will provide examples from *The Elder Scrolls IV: Oblivion* and *The Elder Scrolls V: Skyrim* (Bethesda, 2006, 2011) to reveal some of the difficulties in creating digitally simulated social and cultural worlds, but I will also suggest some design ideas that could improve them in terms of cultural presence and social presence.

## Keywords

Games and intersections with other cultural forms, games as representation, applications of game studies in other domains, heritage, hybrid games and non-digital games.

## INTRODUCTION

I develop virtual reality applications for heritage sites, so I also study computer games to see how people learn through interaction, how different types of knowledge can be presented and learnt and how to engage people with digital media. Unfortunately, those games that present apparently historical content, such as the *Assassin's Creed* series (Ubisoft, 2007-2014), are highly successful games in terms of entertainment but have been criticized as misleading and impoverished social and cultural worlds (Chapman, 2012; Reparaz, 2011) even if we can forgive them for historical inaccuracies.

Their attraction is at least in part due to their richly detailed yet still engagingly interactive game worlds, but the contrast between their ludic quality and their educational value may deter educators from employing games to teach heritage and historical content. To address this issue, I will explore three key concepts, Worlds, Roles and Rituals, to see if the development of digital cultural heritage environments can be better informed by commercial Computer Role-Playing Games (CRPGs) and whether CRPGs can in turn provide something approaching the layered richness of cultural 'worlds' via roles and rituals.

### Worldfilledness Worldfulness & worldliness

The vagueness of the term 'world' is prevalent throughout even academic literature (Champion, 2009). And 'world' has been used as if it is self-explanatory in scholarly publications (Celentano and Nodari, 2004; Darken and Sibert, 1996; Ondrejka, 2006; Okada et al., 2001). PC Mag (PC Mag, 2015) define virtual world as "A 3D computer environment

in which users are represented on screen as themselves or as made-up characters and interact in real time with other users” but this does not describe a world, only a virtual environment that afford social interaction. Definitions of a ‘virtual world’ in recent textbooks (Grimshaw, 2013) also seem to focus on the simulation of the real world (particularly social interaction and community identification) but not cultural practice. Even in his book *Designing Virtual Worlds*, Bartle (2003) avoided a detailed definition of what exactly is a ‘virtual world’ and Klastrup (2002) also points out the difficulty in clearly defining the phrase.

#### Virtual Worlds Have a Social Component

I have previously described (Champion, 2009) virtual worlds in terms of environmental presence, social presence and cultural presence. Society defines who we are, how we communicate and the values that we strive towards. It is the acceptance or condemnation of other people in a society that separates social behaviour from individual habits. Stranded on a desert island, a human who was once part of society would endeavour to live according to his or her social upbringing, perhaps because these behaviours are so fully ingrained, or perhaps in case they hoped to be eventually rescued and reunited with human society.

Quickly bored with automatic feedback mechanisms, humans desire regular but also varied degrees of social affirmation. In games we have reward systems that reflect medals, awards and social respect, but in single player computer games we typically cannot gain the social recognition of others. Deliberately or subconsciously moderating one’s external behaviour in response or anticipation of the opinions or actions of others while in a computer game is a sign that a game is functioning as a social world. However, without social recognition, a single player game is less likely to bind the player to social rules or laws, as players do not have social affirmation or condemnation to guide their social behaviour. We could also argue that a single player game is less likely to compel a rich, expansive and creative experiencing of cultural learning and behaviour, as there is no sentient audience to act as cultural arbiters.



## Cultural Aspects of 'World'

Worlds are not only physical and social but also cultural. I have written about this definition before (Champion, 2011) but it bears repeating (Kroeber and Kluckhohn, 1952, p. 357):

“Culture consists of patterns, explicit and implicit, of and for behaviour acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiment in artefacts; the essential core of culture consists of traditional (i.e. historically derived and selected) ideas and especially their attached values; culture systems may on the one hand, be considered as products of action, on the other as conditioning elements of further action.”

An important point in the above quote is that culture is not simply passive, but it is also a storehouse of values, aspirations and identities. Culture can be viewed as a material embodiment of social structure, mediating the relation between the individual and the community and expressing (as well as protecting) the sacred from the profane. Culture also provides instructions on how habits can become intrinsically meaningful and socially ordered through the practice of ritual (Dornan, 2007). Role-play is curatorial: we choose which aspects of culture are worth keeping and the rest we discard.

In the real world, past inhabitations could have left cultural traces of their ‘micro-scale’ (to paraphrase Ruth Tringham) life-worlds in the real world; is this replicated in virtual worlds? I doubt this. Virtual worlds typically lack the ability to record micro-scale life worlds. For example, many fantasy role-playing games portray previous cultures or cultural beliefs, real or imaginary. The games may feature named characters, treasure, 3D objects, goals and so forth, but they often lack distinctly cultural places and this is perhaps because there are few if any identifiers as to how to behave in another culture, and few if any identifiers to the passing of unique or specifically imaginable individuals. When roles, group behaviours and places are interchangeable, inhabitation becomes merely personal; it can never be deeply cultural.

Conversely, any premise that visitors require other real people in the virtual environment in order to feel cultural presence is not, at least in my opinion, necessary. People are needed to create culture but culture can continue to exist in some material form (and to some extent) without the creators. So I suggest that we can gain a *sense* of cultural presence without experiencing explicit social presence. To quote Agnew (1999, p. 93): "... all people live in cultural worlds that are made and re-made through their everyday activities."

Cultural presence, albeit in a weakened form, is possible in the absence of social presence. This is important for designers who wish to convey a sense of cultural presence but who do not have the technology to simulate believable and authentic NPCs (Non Playing Characters) and avatars as cultural agents and are creating single player CRPGs, not Massively Multiplayer Online Role-Playing Games (MMORPGs). And here place is essential. I define cultural presence as a visitor's overall subjective impression when visiting a virtual environment that people with a different cultural perspective occupy or have occupied as a 'place'. Such a definition suggests cultural presence is not just a feeling of 'being there' but of being in a 'there and then', not the cultural rules of the 'here and now'.

However, the sense in which these virtual environments move beyond 'cyberspace' towards 'place' is not clear to many (Johnson, 2005). To edge closer to being perceived and remembered as a place rather than as a space, I propose three criteria: that a virtual world must provide different ways to do things, allow for ways to record and memorialize what has been done, and provide for social mobility, social competition and social progression.

Firstly, a world may have *worldfilledness*. The digital environment allows for different ways of *doing* a multitude of things; it is interactively rich and layered. For example, Johnson (2005) and Steinkuehler (2006) have argued that current massive multiplayer game environments are often a mixture of vague and clear objectives. In these environments peo-

ple immerse themselves not merely by spatially navigating from point A to point B, but also by exploring the environment as a shifting world of interactive possibilities.

Secondly, the virtual world of a computer game may involve learning how to translate and disseminate; the simulation may also modify or create the language or material value systems of real or digitally simulated inhabitants. In this situation, the game play hinges on how well culturally appropriate information can be learnt and developed by the player or passed on to others. *Worldfulness* in this sense is to what hermeneutical extent the virtual environment or game can store, display and retrieve information on the encounters of people in places.

But it is not only the worldfulness potential of a virtual world that is required for rich shareable experiences. A virtual world could afford *worldliness* in terms of its social aspects, although I define this term quite differently to Ropolyi (Damer and Hinrichs, 2013). In my definition worldliness is the skilful cunning and strategic experience by which players can choose social roles to improve their standing and success in a virtual world. The player may decide (or be compelled) to choose between a range of self-identifying livelihoods and positions that allow them to develop and maintain social skills and status (Herold, 2006). In a virtual world that provides for this social role-based competition, the players could be rewarded or punished depending on how well they interact with other players or imitate appropriate social behaviour.

### Enriching Roles And Role-Playing

In the article *GNS and Other Matters of Roleplaying Theory, Chapter 1*, Ron Edwards (2010) wrote that role-playing requires Character, System, Setting, Situation and Color. My concern with CRPGs is that the character is too often merely a graphically drawn avatar and their unique relationship to the world can be merely cosmetic. Their role fades into nothingness. Critics have mentioned roles in role-playing games are typ-

ically mere affordances and the games do not involve genuine role-playing (Tychsen, 2006).

The missing quality in CRPGs that appears to exist in live role-playing has been observed by Hitchens and Drachen, who proposed that a role-playing game requires a combination of factors: a (sand-boxed) game world (“A role-playing game is a game set in an imaginary world”), participants, characters, Game Master, interaction (a wide range of interaction), and narrative (Hitchens and Drachen, 2008). As real world role-playing allows roles to be transfigured, expanded, overtaken or replaced, so too should virtual role-playing game worlds also afford these possibilities.

Then what are the features and dimensions of real-world roles and role-playing? Hitchens and Drachen have already remarked on differences between live role-playing and digital role-playing games. If we take a dictionary definition (Dictionary.com, Undated) of roles as “the modifying of a person’s behaviour to accord with a desired personal image, as to impress others or conform to a particular environment” or as “Psychology: The unconscious acting out of a particular role in accordance with the perceived expectations of society” (Oxford Dictionaries, 2015), the inter-social dimension of role-playing is more obvious.

I suggest that social roles in our real world do more than distinguish individuals, provide individual purpose in life, or divide up responsibilities according to capabilities and political acumen. Roles are purposeful and goal-based. They create and demarcate social identities (Fein, 2015) but they also have a component of cultural curation (preserving and transmitting elements of social mores and values), while allowing for evolution and personalization.

I argue that the cultural (rather than merely social) aspects of roles and role-playing have been downplayed, to the immersive and engaging detriment of CRPGs in general and to a potential use as cultural learning environments in particular. In game studies and virtual environment

research, 'culture' and 'society' are two terms that have been used interchangeably, while the term 'world' has been used loosely, and one important if often hidden aspect of 'world' (to afford, structure and separate personal decision-making), has been downplayed or neglected.

In a similar vein, Hocking (Ruberg, 2007) has suggested that people explore spatially, explore the game-system or use the game to explore their own identity, values, or inner conflicts. The first sense is aesthetic, the second strategic and the third is perhaps phenomenological and more externally related than it may first appear. The issue here is the daily conflict between our experiential sense of selfhood and the demands and surprises of the wider world.

How does this tie in with role-playing? The three broad affordances or aspects of 'worlds' have corollaries in role-playing. In full role-play and in richly explorative worlds the player experiences a varied and rich gamut of choices, meaningful decisions and complex consequences. Not only is there possible selection of various roles, there is some degree of freedom in how one interprets and performs that role. So a world made for role-playing should capture some of that freedom of choice, individuality and complex fate. An important part of role-play is role-selection and a world rich in such affordances would allow a multitude of possible paths.

The second aspect of a world tailor-made for role-play is its ability to adopt, adapt, fuse or fight the social identity and position of various roles in relation to others. Roles are social and while designed by society to avoid conflict (where everyone knows their place) they somehow create more conflict. The vaguely shared understandings of roles often create dissent and sometimes lead to open conflict. Roles are continually socially defined and their parameters are continually re-interpreted, identified with, or identified against. Hence the polemical tendencies of real-world RPGs that Tychsen et al. (2005) considered a weakness, I consider to be a strength. For the conflicts between players and the game master are remembered and reflected upon, not the roll of the die. And there is

potential for social conflict, between my perceived role and my role (and fitness for that role) as perceived by others.

The third aspect of a world tailor-made for role-play is not so obvious. I suggest that in role-play not only are we negotiating our interpretation of the role against practical everyday issues, not only are we interpreting and communicating roles in terms of others around us, as role-players we are also acting as curators of tradition. For role-playing allows society to carry forward its goals, values, structure and messages.

In fulfilling a role we are given some responsibility in filling out that role, consolidating the important parts through habit and ritual and ignoring accidental features. The way in which society is preserved and passed on is due in no small manner to the way in which roles are interpreted, inhabited and disseminated by the role 'keepers.' So in a sense role-play is curatorial, we choose which aspects of culture are worth keeping and the rest of the information we discard.

#### Role-playing Games as Virtual Worlds

It may appear that computer games do not afford a sense of cultural presence unless they are multiplayer environments that allow human players to create and leave artefacts that represent their cultural perspectives. The computer game *Oblivion* has encouraged me to change some of my views on the paucity of inhabited social or cultural worlds, despite its single-player nature and some gameplay shortcomings. I count at least half-a-dozen features of lived-world creation, not common to most computer games, but I have suggestions on how to also further improve them in order to create the illusion of *Oblivion* and similar games transform into not just a social world, but also a cultural one.

With environmental presence the individual affects and is affected by the outside world. If there is social presence we affect others in a virtual world. If there is cultural presence we should be able to detect a distinctly situated sense of inhabitation, of social values and behaviours preserved and transmitted through ritual, artefact and inscription.

Social presence does not necessarily require multiple players (although single-player social presence is definitely much more difficult) and cultural presence does not have to be alive (active). One thing that is required is hermeneutic richness, the depth of interpretation available to self-understanding or understanding others through artefacts and other cultural remains. Here ritual plays an important part, if it does not become too tiresome, if observing and performing it provides in-game benefits and as long as it does not seem laboured or 'cheesy.'

However, socially enriched roles are also vital; they help us develop our own identity in relation to our society, long-term involvement in developing a role results in an attitude of care and compassion and installs respect for other people or players in similar positions. Roles also allow us to play out different aspects of our selves; they provide a framework for future plans.

#### Role-playing and Cultural Learning

Role-playing is both an important part of cultural learning (Hallford and Hallford, 2001, pp. 231-236) and an important genre in computer games (Tychsen, 2006). Roles are intrinsically related to the notion of social worlds, yet the mechanics of this relationship are not clear in the academic literature. There are few grounded theories in computer game studies on how role-playing works in sustaining and augmenting a thematic world. There are few clear descriptions of what 'world' means in this context and how roles, worlds and rituals are inter-related. Further, distinctions between social and cultural dimensions of both roles and worlds are seldom discussed in any great detail. For historical simulations and virtual heritage projects the cultural and social dimensions of both real world and virtual world playing are important and commercial Computer Role-Playing Games (CRPGs) seem to offer more opportunities to support deeper cultural aspects of role-playing. Can 'deeper' notions of culture be conveyed through a deeper understanding of worlds, roles and rituals?

## Moving Rituals

One type of framework or event-based system that helps demarcate roles but also displays information about how people can *be moved* (inspired) but also *move* beyond (transcend) their current role is the ritual. Rituals are not often described in any great detail in computer game literature, at least not in a way that parallels discussions in anthropology (although there are anthropologists who have influenced game studies, the concept of rituals in game studies as not as detailed as in more anthropological fields). This is particularly significant for role-playing games but even what ‘role-playing’ means is seldom clarified.

I note in passing that my framework is much simpler than but potentially congruent with Mark Wolf’s (2014) criteria for imaginary worlds. However, the virtual worlds that I have in mind are not the secondary worlds (imaginary worlds that are separate from our real-world), as exemplified by Tolkien’s *Lord of the Rings* and discussed by Wolf (2014). *Lord of the Rings* was not only fantasy; it was also a reconstituted mythology, a conjectural reassembly of past themes and narratives but with a post-world-war allegory. If they are to be more than static models, archaeological simulations must be simulations of the past through present remains, contemporary scholastic imagination and evidence-based hypotheses. But this is not only a feature of archaeological simulations; it is also a feature of cultural representation in general. Culture is a recollection but also a teleological and conjectural process. These virtual worlds are thus *conjectural* worlds. As they combine historical situations, conflict, social agents and cultural beliefs, these conjectural worlds require their own ethical dimensions and attention paid to how their story can be told, while engaging the player and contextualizing their actions.

### A Potted History of Rituals

At least as far back as 13,000 years ago, our ancestors appeared to have fed the dead or dying a last supper, with specially shaped or laid stones and plants, food offerings and dedicated flower beds (Shapira, 2014).



Rituals have been part of human culture for many thousands of years, but how do we know when they are enacted and how do we simulate them and how do we know when they have been performed correctly, to an engaged and suitably appreciative audience?

There have been several papers about rituals in computer games (Gazzard and Peacock, 2011), but the ones I have read have so far don't seem to cover the cultural rather than social importance of rituals. Although one can describe social habits as rituals, rituals do not happen everywhere and anywhere. They are not only or even primarily repeated personal habits. Even if ritual exists on a spectrum with daily habits, there must be some distinguishing features for the term to have any relevance. For example, Roskams et al. (2013) describe ritual objects as "ceremonial, deliberate, formal, formalised, intentional, non-utilitarian, odd, peculiar, placed, ritual, selected, special, symbolic, token and unusual." Scott Kilmer (1977, p. 45) wrote "ritual consists of sacred ceremonies and their routines, with the routines being seen as consecrated acts which contain great mystical powers." He added that rituals contain 'stylized acts' which are adhered to rigidly.

Role-based action in rituals is typically performative and other people often judge the action (but not necessarily during the ritual itself). So a ritual is culturally specific and socially arbitrated. The ritual is typically in a specially designated space, with an introduction ceremony and attendance is not open to all. While the objects and settings of ritual events can vary enormously, there is typically a sense that rituals can go wrong and that something is lost from society when rituals disappear.

For both audience and performer there may be specific physiological and postural requirements. Mossier (2012, p. 58), for example, wrote: "Various sensorial techniques are used to commit and stimulate the participants' body, senses and spirit." The head and body are directed; there are conventions on where one can look and for how long. By specific physiological requirements I mean that that body has to be controlled, directed

and time-regulated, it typically has to be set in repose or rhythmically controlled.

The ritual itself may happen on specific dates in specific places for specific events. There could be progression, framed or choreographed against a landscape that thematically relates to the event (such as the deliberately meandering path that leads up to the Acropolis complex of Athens). There needs to be a critical mass of believers. There are demanding levels of attention required from both the spectators and from the performers. The ritual is typically part of a wider system of belief, based on mythic causality (the belief that certain actions trigger certain responses at a scale different to the human one). And the ritual is traditional in that it typically is inherited from the past and carries clues as to how it should be performed by future generations.

According to essays inside the edited book *Understanding Religious Rituals* (Hoffmann, 2012), rituals typically frame events. According to essays inside the edited book and proceedings *The Study of Play: Problems and Prospects* (Lancy and Tindall, 1977), mythology requires rituals to communicate their message and importance to the wider group. This book also raises the interesting issue that play must be unstructured. This stipulation creates an interesting tension for game definitions, especially for theorists who believe that games are systems of rules. A particularly interesting essay, by Fredericka Oakley (1977), lists five elements of play (for primates):

- A reordering of ordinary behavioural sequences
- Exaggeration of movements
- Repetition of movements or behavioural patterns
- Incomplete behavioural sequences and
- Increased tempo in movements

The distinction that some theorists make between rituals, game and play may also not be as strong a distinction as they have stated. Extrapo-

lating to humans, the distinction between play and ritual may be not as strong as I had thought; there can be elements of play inside rituals (Kilmer, 1977, p. 158). For example, in *Religion as Play, Bori-a Friendly 'Witchdoctor,'* Frank Salamone (1977, p. 166) argued that “both play and the sacred suggest the game-like quality of socio-cultural life...Play and sacred ritual suggest the possibility of change ... New games can be played with different rules.” This is an interesting counter proposal; rituals allow us to see social structures are flexible and short-lived, but it is also a reminder that if we see games as a system of rules, when we try to simulate cultural activities we risk losing the anthropological insights into the relationships between rituals, play, games and society.

Rituals do not necessarily share all of the above features; but they are certainly not features of personal habits. And we can see that rituals require more than just physical (or virtual) attendance. They require complicit engagement and adherence and on the part of the performers, either care, dedications through years of training and / or complete frenzy.

We also seem to have inside our heads an inclination to situate through rituals and through habits of going about our daily lives. Tilley noted (1999, p. 29): “Rituals not only say something, they do something.” While Hodder attempted to show how hermeneutics (the study of interpretation, originally of historic texts) could be used in archaeology, “ritual regulates the relationship between people and environment” (1986, p. 23) and artefacts indicate the shared intentions of their creators (1986, p. 25).

Rituals may allow us to see through the eyes of the original inhabitants, or at least feel that this place once belonged to someone else. Rituals aid our memory; they commemorate important cyclic observations, changes in season, tides and constellations. They allow us to connect back to nature and to wider family groups for both symbolic and practical reasons. Rituals can also function as a rite of passage or as social control. Most importantly for our purposes, rituals are a way of preserving and

passing on cultural knowledge. Yet how does one design for a cultural ritual taking place in a particular cultural place in virtual heritage environments? Digital environments typically lack an in-world social authority or audience to ensure rituals are practiced correctly; participants are not fully physiologically immersed in the digital space; they lack the means to fully teach ritualistic practice; they also lack reasons and incentives to develop and refine rituals through long-term practice.

### Staging Rituals

There are certain clues in the above paragraphs that might help us use technology to simulate the staging, process and reception of rituals. To ensure that the required people 'are in the moment' we need camera tracking of their faces or gaze detection (or use Head Mounted Displays). Camera tracking can also show their posture and level of repose. We can also use biofeedback track their physiological levels of excitement and calm.

To ensure that performers take care, we can also exaggerate the scene-destroying affordances if their attention wavers. If their avatar moves or looks around too often, perhaps the voice of the performing character becomes muffled. Outside noise becomes apparent and increases in volume, NPCs shuffle away, or the screen dims. We can program interactive events to only trigger when certain events (such as the passing of cosmological bodies) take place. We can have events; textures and 3D objects triggered or transformed depending on the level of user engagement (determined from gaze detection, head tracking, biofeedback, movements or other behaviours of the avatars). We could also deliberately exaggerate sounds inside certain areas or spaces, to make the breaking of ritual all the more obvious.

To clearly demarcate differences between sacred / ritual space and profane or mundane space, we can transfer the lessons developed in building sacred architecture. There are several historical heuristics in the design of architecture. For example, where movement (along a path) is required,

there do not decorate. Where designing places of repose (centres), there decorate. Create sightlines to line up sacred objects from certain vantage points. Design different textures and apparent cleanliness to demarcate sacred and profane space, as well as raise and heighten floors and levels and ceiling heights to spatially distinguish the two. Use symmetry for sacred spaces, asymmetry for functional spaces.

Games as WorldsNow that we have established some simple definitions, we can ask if CRPGs can be social or even cultural worlds. It is true that single player games are now powerful enough to convey the impression of shared worlds with social presence and social agency. A practical reason to explore single-player worlds is that they don't require highly sophisticated AI, which also makes great demand on computational performance.

Many theorists have focused on multiplayer social worlds, not single player hybrid computer role playing games (CRPGs). However, as an example of a single player CRPG, *Elder Scrolls IV: Oblivion* (as well as its successor, *Elder Scrolls: Skyrim*), has much to offer in the inter-relationship of world and player and it has further potential in the simulation and affordance of social interaction, communal identity and cultural learning.



Figure 1: *Oblivion* had simple social feedback. Screenshot by author, copyright Bethesda Game Studios.

The most recent *Elder Scrolls* games share seasons and changing weather patterns, a large and changing landscape, hostile creatures, inventories, and various types of possible interaction that are not just typical adventurer violence (praying, healing, reading, weapon creation and repair skills, persuading and charming, causing fear, creating followers, recognizing and collecting flowers and animal specimens for alchemy experiments, buying and selling, sneaking and thievery, inducing disgust or revulsion, fomenting frenzy and chaotic behaviour, trapping souls, and so on). The Non-Playing Characters (NPCs) have a life of their own, are of different races and professions, have detection awareness, and can speak dialogue, and be persuaded charmed or repelled. All these features can be modified by the *Creation Kit* available in *Skyrim*, or by the *Oblivion Construction Set*.

#### Limited Role-Playing

Even though it is a single player game, several key features allow *Oblivion* to be considered as a social world (Figure 1). Despite these promising features, *Oblivion* fails as a rich cultural world. Roles are designed

for game balance and act more as initial affordances and concrete templates than as social profiles that allow and record differences between social expectations and individual behaviour. In other words, while certain performances can lead to expulsion from guilds, there is little if any curatorial responsibility, roles are really attribute parameters, they are not made, they are followed and maximised. The later versions of the game (*Skyrim* and *Elder Scrolls Online*) do not yet appear to have addressed these issues apart from featuring enhanced graphics, the ability to control via voice on the Xbox Kinect and the multi-player nature of *Elder Scrolls Online*. *Skyrim* also allows the player to discover preferred skills, rather than basing them on racial characteristics, which was how *Oblivion* chose to set the base individual skills.

#### Improving Embodiment

*Oblivion* has a mild form of spatial detection, it is possible to be directly behind an NPC and attack repeatedly without being detected, but generally the NPCs find attackers from the direction they were attacked from and NPCs can be bumped from observing special areas without them noticing who bumped them! However, *Oblivion* lacks a social understanding in this spatial awareness. Social worlds often feature attempts at natural language processing (Perlin, 2005), understanding a player's keyboard inputted questions and answers. Of course that misses the tone and stressing of verbal dialogue but a great deal of real world social understanding is also acquired through viewing the gestural, facial and postural expressiveness and habits of other members of a community.

In designing a social world, a believable NPC should have some idea of how a human player's avatar feels inside the space, their intentional state and affinity to objects and how they behave in the space according to perceived role and social status. Creating a believable emotionally expressive actor (NPC) is difficult (Perlin, 2005; Fabri et al., 2002) but the problem also involves giving the NPC enough information about the player behind the hero character (Perlin, 2005). If head tracking (via commercially available sensors attached to caps or similar), eye-

gaze tracking (via a webcam or similar) and biofeedback data were fed directly into the NPC's AI, the NPC could make more player-related choices. Tracking head movement and gaze direction and perhaps postural changes could allow the NPC more ability to relate directly to the intentional and focused state of the player and could also help the player to mimic roles of NPCs in the game (see next section for elaboration of this point). Luckily, *Skyrim* can be played with an Xbox Kinect and modifications could allow more subtle gestural actions.

We have also connected biofeedback to games and game mods (Dekker and Champion, 2007). Using a commercial game engine we fed galvanic skin response (GSR) from the player into the game to change the game play in direct response to the 'excited' level of a player; but using biofeedback creates more problems. One major problem is how best to indicate to the player how their biofeedback affects gameplay. If done well, communicating this biofeedback via NPCs could increase the immersivity of the game and could also enhance the apparent intelligence of the NPC.

However, this biofeedback should also be communicated indirectly back to the player through triggered or default behaviours of their avatar. Perhaps the avatar becomes jumpy when the player's GSR increases; perhaps when the player's heartbeat or breathing slows down their avatar does not visually scan so often. *Oblivion* and *Skyrim* allow the player to switch between first person and third person view, but biofeedback could automatically override this automatic camera change when the player becomes excited. When music suggests a nearby enemy, the field of view could also automatically widen and switch to first person.

Participatory Culture, Open Stories And Book Design Like *Oblivion*, *Skyrim* features books containing minor narratives to help game-play. Librarians also play an important part in the meta-narratives and minor quests, as does a certain dragon archivist (Champion, 2014). These books can be stored or traded but now they can also be modded via the game's *Creation Kit*. The game can be modded and videos can be



inserted as cutscenes, but the books can also feature new text and the text can be automatically read by new voices (Figure 2).



*Figure 2: Skyrim mods allow modders to incorporate voice-overs, movies and their own books. Screenshot by author, copyright Bethesda Game Studios.*

Books can become gameplay keys: when collected together, text from books adds to map information or provides more abilities or gateways to different places (portals). Books can also double as triggers: the designer could place books to trigger specific events. Books could also be created from text fragments. The fragments might need to be found and placed together in the right sequence for the entire book to appear. It is also possible to import RSS feeds as images (PNGs). Books could be collected and used to train NPCs. By opening books to specific pages certain events or other forms of knowledge could be communicated to the NPCs.

There could also be a version of the memetic drift idea that I have discussed in (Champion, 2011). The player could be required to trade specific books in order to see a progression of ideas or counterfactual worlds. Perhaps trading specific books would affect the NPCs or change the social dynamics.

Another idea might be that of augmented storyteller. For example, the player is asked to find flowers and herbs and connections or metals or crafts and match to descriptions that they read in books in the game.

With some modification, the game could add player-created screenshots and movies into the books to create alternative histories, individual travel guides, or personal memory collections.

A more complicated idea would be that of author discovery. The player's task might be to find specific book authors. They might be required to match the written dialogue to the spoken language used by NPCs, with the authors in the game as typical NPCs.

Conclusion: Worlds, Rituals and Role-Play Virtual worlds are more than spaces, and I suggested three aspects that deserve more investigation. Ritual-making is also an under-researched area of investigation and I have suggested three components of role-play that need to be incorporated into a rich role-playing game as well as three aspects of virtual worlds that may help enhance role-playing

- A virtual world should enable freedom of choice, individuality, but also a complex fate. An important part of role-play is role-selection and a world rich in such affordances would allow a multitude of possible paths.
- A virtual world has the capacity to afford the social jockeying of position as roles are socially defined, shifting and often challenged by other social agents.
- A virtual world allows us to act as curators of tradition. For role-playing allows society to carry forward its goals, values, structure and messages.

I also suggested three dimensions of presence that all help virtual worlds afford a sense of role-play. These are physical presence, environmental presence and cultural presence. Unfortunately *Oblivion* and *Skyrim* are not fully developed cultural worlds; the player does not hermeneutically interpret the virtual world, nor are their actions hermeneutically interpreted. One may argue the limitations that I discussed are the inevitable consequences of single-player computer games. I counter that CRPGs

could be further developed as both social and cultural worlds and I provide some design ideas to help us improve these CRPGs.

I hope that the issues I raised will help designers and game scholars better appreciate (and explore further) how cultural presence is much more difficult to attain than social presence, without undermining its value and significance. My long-term aim is to employ CRPGs (and their in-game editors) more effectively and inclusively as a learning tool for educators in history, heritage and cultural studies. I suggest that in order to achieve this aim, more investigation into worlds, rituals, and role-playing is required.

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# Postdigital Interfaces and the Aesthetics of Recruitment

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## ABSTRACT

This paper analyses reconfigurations of play in emergent digital materialities of game design. It extends recent work examining dimensions of hybridity in playful products by turning attention to *interfaces*, *practices* and *spaces*, rather than devices. We argue that the concept of hybrid play relies on predefining clear and distinct digital or material entities that then enter into hybrid situations. Drawing on concepts of the ‘interface’ and ‘postdigital’, we argue the distribution of computing devices creates difficulties for such presuppositions. Instead, we propose thinking these situations through an ‘aesthetic of recruitment’ that is able to accommo-

date the intensive entanglements and inherent openness of both the social and technical in postdigital play.

## Keywords

Hybrid games, interfaces, postdigital, practices, spaces, digital play, phenomenology, recruitment

## INTRODUCTION

‘Hybrid play’ designates recent trends in product and game design that take advantage of new compositions of material and digital arrangements afforded by emerging technologies. These include micro-electronics, embedded sensors, and the ‘app revolution’, which are facilitated by a range of devices, infrastructures, protocols, and applications such as mobile devices, wireless networks, near-field communications (NFC) and tagging technologies such as RFID. Hybrid games include: location-based or spatially-oriented forms such as ‘pervasive’, ‘locative’, ‘augmented’ and ‘mixed’ reality games (e.g. Montola 2011); as well as more technology or device-oriented forms such as computer-augmented board games, appessory games and connected toys (e.g. Bergström and Björk 2014; Tyni, Kultima and Mäyrä 2013).

In turn, these game developments and associated idioms have challenged methods of analysing video games in terms of the classic arrangement of material devices (either console or PC-based) and virtual spaces. In many of these emerging games, the relations between embodied participation, mobile or sculptural devices and versatile digital elements call for the development of more theoretical and critical approaches to hybrid forms of gaming. Here, we argue that the contemporary situation of widely distributed computing complicates the device-focused ‘hybrid dimensions’ approach developed by Tyni, Kultima and Mäyrä (2013) because we cannot pre-judge the spaces in which play will occur or the devices and bodies that will engage in ludic behaviour. As Berry and Dieter (2015) argue, the contemporary moment reflects a ‘postdigital

aesthetics’ in which relations between space, time and bodies are ‘in a regular state of constant upheaval’. We suggest it is productive to conceptualise hybrid gaming within the context of postdigital aesthetics – a situation in which it is increasingly difficult to pre-judge what will constitute the interface, and who, where and when different elements will be enrolled into such digital materialities of gaming. Thus, this paper offers some preliminary analysis towards conceptualising postdigital play, initially by identifying examples in terms of three scales of spatial practices: the conventional game space, the domestic space, and the public space. We then situate these examples within interface theories and criticism, and in particular the phenomenologically-informed elements of Farman’s (2012) ‘mobile interface theory’, to argue for viewing hybrid play interfaces as an aesthetic of ‘recruitment’ which enrol and blur diverse spatial domains, social practices, and material lives.

## HYBRID DIMENSIONS: SYNCHRONY AND DEPENDENCE

It is important to acknowledge that video games have always been ‘playful hybrid products’. The recent passing of Ralph Baer enjoins us to recall his work and how it shows that the commonsense notion of what a video game ‘is’ or ought to be is a case of false concreteness: there are other possibilities and potentials for how games could have developed. Baer’s work (along with technician Bill Harrison) led to the Magnavox Odyssey (1972), which was tied to the television and thus has some similarities with the contemporary game console, but Baer also experimented with peripheral input devices such as a light gun and visual elements such as translucent plastic screen overlays. The Odyssey shipped with traditional play aids such as tokens, score cards, chips, play money and game boards (Winter 2008, 50). Baer also worked on the electronic toy Simon (Milton Bradley, 1978) (Donovan 2010, 69-70), which is a precursor to some contemporary hybrid play products. Baer’s *bricolage* resonates with those of other early creators such as William Higginbotham (creator of *Tennis for Two*), MIT’s Tech Model Railway Club (inventors of *Spacewar!*), Will Crowther (creator of *ADVENT*) and many others.

The history of video games, through arcade, console and PC generations, attests to a long tradition of creating intensive relations between a wide variety of designed objects, semiotic systems, forms of cultural capital, marketing techniques, and experiences of play. Video games are *natively hybrid*.

Current trends towards hybridity are thus something of a return to form. As in 2007 – when the *Nintendo Wii* showed up the narrowness of the industry’s notions of unidirectional innovation by emphasising a novel control scheme rather than more powerful hardware – a renewed conceptual and scholarly emphasis on hybrid play is warranted today, as Mäyrä et al. (2014) argue in their introduction to a timely collection on the topic. The issue is all the more pressing because while the *Wii*’s gestural controller re-deployed the relation between gamers and their domestic spaces, a survey of the contemporary gaming situation indicates that designs, techniques, objects, networks and bodies are proliferating and redistributing the digital materialities and relations of play across multiple hybrid dimensions – often challenging notions of public and private space.

Reconfigurations of material and digital elements, which are increasingly mobile, ‘pervasive’, ‘locative’, ‘augmented’ and ‘mixed’ (Montola 2011), can be characterised as postdigital in terms of gaming that is continuous with the digital, yet also exceeding the digital through conditions that are embodied, technical and historical (Berry 2014; Schinkel 2014). Broadly, then, the postdigital ‘describes the messy state of media, arts and design after their digitisation...a media aesthetics which opposes such digital high-tech and high-fidelity cleanness’ (Schinkel 2014), in which ‘the historical distinction between the digital and the non-digital becomes increasingly blurred...[and] computation is part of the texture of life itself which can be walked around, touched, manipulated and interacted with in a number of ways and means’ (Berry 2014, n.p.).

This complexity reveals difficulties with the ‘hybrid dimensions model’ of Tyni et al. (2013), which identifies two analytic dimensions: syn-

chronicity and dependency. Synchronicity refers to the degree to which digital and material are experienced simultaneously in a given product (an app that can only be used in concert with a material toy has high synchronicity). Dependency indicates how integrated the elements are (a toy can be played with even if the app isn't loaded, so there is a low level of dependency). While this model is effective in characterising important differences between the games that Tyni et al. study such as *Disney Infinity* (Avalanche Software 2013), the *Skylanders* series (Toys for Bob 2011-) and *Invizimals* (Novarama 2009), the case studies are limited to commercial 'hybrid playful products' which assert highly determined regimes of production and consumption – they seem relatively clear and distinct both as designed objects and as games.

The concept of the postdigital challenges such binary logics because of the highly distributed state of contemporary computing technology. Where Tyni et al. tend to distinguish between a material toy and digital game space, for example, from a semiotic point of view the material toy is a signifier which can be analysed in terms of 'virtual' signifieds; similarly, the virtual space of the digital game has 'material' impacts on the bodies that engage with it (Farman 2012; Apperley and Jayemanne 2012). In the case of the 'connected toy', such as the controllable ball Sphero (Orbotix 2010), is whether or not the ball is working independently from the app the most interesting or pressing question for scholars to ask? In increasingly postdigital situations of play, there is clearly a need for more theoretically informed approaches.

Furthermore, by attending to well-defined commercial products, Tyni et al. tend to analyse the uses of each game from the point of view of 'proper' play that follows the clear design affordances of the game devices in question. Games are not always played as intended, and these forms of 'counterplay' are often considerably dynamised by people, events and objects in the locations where play takes place. As such, the focus on game technologies and their digital-material elements tends to leave aside questions about how such hybrid games may reconfigure the subjects or spaces in which they operate: for example, the complex

domestic spatial ecology involving interrelations between family members, architectural layout, social media engagements, physical toys, digital screens, game consoles, wireless networks, and so on.

Instead of focusing on particular devices and therefore presupposing the contexts and spaces in which they are used, then, this paper explores the *practices, materials* and *spaces* that are opened up, occupied, or challenged by these hybrid games. Examples of hybrid play – which have seen game designs enter into new collaborative arrangements with disciplines such as urban design (de Souza e Silva and Sutko 2009), augmented board games (Bergström and Björk 2014), playground design (Poppe et al. 2014), and many more – go beyond the contexts of commercial product design, and suggest a need to account for the way that technologies, spaces, games and players enter into re-fashioned or unpredictable relations and thereby challenge designed uses and values.

These configurations of hybrid play considerably complicate the ‘magic circle’ model of play – so much so that the ‘circle’ can take on almost theological connotations (having its centre nowhere and circumference everywhere). If not precisely theological, for Farman (2012), the potential for pervasive games to make a magic circle appear in public and communal spaces has significant *ethical* dimensions. He examines geotagging gamers, whose behaviour can be confusing for onlookers. Players refer to non-players they encounter as ‘muggles’, a reference to the way characters in the Harry Potter series of books talk about people without wizardly abilities. Passers-by may be liable to become unwillingly ‘immersed’ in someone else’s locative game. This leads Farman to raise the ethical question of how a game that takes place in public space should be played to minimise the involvement of unwitting or unwilling participants.

A contemporary example would be Google Glass, which was recently discontinued as a consumer technology (Warren 2015). The device caused discomfort for people who were concerned that they were being recorded without their permission (the term for Glass users changed from

Google's preferred 'explorers' to the vernacular 'glasshole'). Conceived as a kind of 'everyware' (Greenfield 2006), Google Glass struggled in public space, but the company plans on re-releasing the device with an orientation to businesses (with an emphasis on healthcare and construction) – a second life in more contained and predictable contexts. Another example is the renewed interest in virtual reality headsets – devices whose value putatively lies in the creation of a type of particularly bewitching magic circle – shipped with 'a nearly 1000-word set of "Gear VR Product Use Warnings"' (Orland 2014). Virtual reality, it seems, can't help but keep crashing into reality. The 'magic circle', therefore, may be better reconceptualised as spatially, temporally and socially 'expanded' (Montola 2005) or perhaps as a set of 'frames' rather than a unitary bounded space (Mäyrä and Lankoski 2009; Jayemanne 2010).

Hybrid play thus takes place in contexts that are increasingly postdigital: their limits and characteristics cannot necessarily be predicted before they emerge in the process of play. Here we propose to modify and expand on the hybrid dimensions method of analysis from the point of view of diverse *interface effects* (Galloway 2012), rather than pre-defined devices or products. This theory informs the analysis of situations in which the set of playful actors, objects and spaces exceed discrete, pre-defined units (such as the 'hybrid playful products' Tyni et al. focus on) – accounting for a postdigital situation in which 'computation becomes experiential, spatial and materialised in its implementation, embedded within the environment and embodied, part of the texture of life itself but also upon and even within the body' (Berry and Dieter 2015, 3).

For Berry and Dieter, postdigital aesthetics involve the contemporary navigating of a complex field of distributed computing devices which entail a state of *agnosis* or 'not knowing'. This calls for a kind of 'agnotology':

By 'agnotology' we are referring to the way in which computation facilitates a systemic production and maintenance of ignorance. The tendency



towards automated and accelerated modes of action complicates and may undermine structures of reflection and critique. One consequence is a twisting and turning of computational logics into other contexts against attempts to orient and ‘get a grip’ on computational things (Berry and Dieter 2015, 5).

In the context of hybrid play, the concept of the postdigital challenges assumptions that it is easy to know or readily identify what is digital/virtual and what is physical/actual (and therefore whether they can be characterised as simultaneous or dependent) prior to analysing any given situation. In short, the hybrid dimensions model can be developed to account for multiplying hybridisations. One way to approach this problem is to theorise the *abilities* of interfaces to bring new bodies and spaces into relation – or, conversely, how an interface arises as the set of these abilities rather than as a predetermined ‘thing’. Rather than conceiving the interface as a stable or determined object, it is understood as various *practices of interfacing* (Cramer and Fuller, 2008).

To achieve this, in the following sections we describe instances of hybrid play at three scales of postdigital spatial practice: the conventional game space (such as the PC or console setup or the board game), the domestic space, and finally the public space. In each case, we focus on the way that *asymmetric* and *contingent* bodies and spaces are organised by these interface effects. Following this, we draw on interface theories and criticism, and in particular Farman’s (2012) phenomenologically-informed ‘mobile interface theory’ and concept of the ‘sensory-inscribed body’ as a way of approaching hybrid game play. The goal of this approach is not to analyse the synchronicity or dependency of a given object, game or product so much as to explore the post-digital synchronisations and dependencies at work in *recruiting* the playful objects and participatory subjects of interface play. This aesthetic of recruitment enrolls increasingly diverse spatial domains, social practices, and material life.

## CONVENTIONAL GAMES, NEW HYBRIDITIES

As has been noted above, while hybrid play is often presented as a newly

emerging phenomenon, video games are already natively hybrid, post-digital constructs. However, various types of hybridisation may be more or less successful – even if they have considerable commercial power behind them. Microsoft’s attempt to force the issue of hybridising the traditional functions of the console with always-on internet connectivity and Kinect motion tracking for their Xbox One console met with significant resistance. Introduction of new hybridities can also significantly alter the experience of play – for example, the introduction of voice communication can lead to very different MMO interactions than would otherwise be the case (Carter, Wadley and Gibbs 2012).

Video games are renowned for their ability to create immersive effects, but immersion is not limited to the attempt to recreate the ‘unmediated’ experience of phenomenal space – as many FPS games are supposed to do. It is possible to become as immersed in the third-person *Dragon Age: Inquisition* (BioWare 2014) or the godlike perspective of *Civilisation V* (Firaxis Games 2010) as it is any FPS. In all such cases, the interface is highly effective in organising the proprioceptive, cognitive and other powers of a human player with the various capabilities of the devices that comprise the game apparatus. When video games work well they are excellent examples of what Farman describes as the sensory-inscribed body (a concept expanded below): an interface that players almost see ‘through’, looking as if through a window into another, virtual world.

However, as Consalvo (2007) has shown through the example of cheating, actual play often belies the magic circle thesis even in conventional video gaming – players often hybridise their experience of the game with ‘paratexts’ such as cheats, walkthroughs, FAQs and the like. The FPS-MMO hybrid *Destiny* (Bungie 2014) saw players abandoning the typical mission structure to exploit a (subsequently patched) ‘Loot Cave’ where an infinite supply of weak enemies could be harvested for drops, and more recently adopt a method of beating a powerful raid boss by yanking the console’s LAN cable (Schreier 2015). Even a successful effect of immersion may not endure with a particular player. Trying to play a once-loved game in an emulator can be an alienating experience: the

interface's ability to organise the asymmetries between player and apparatus may not match up to a fond memory, or the control scheme may ruin the experience: in the failure of the magic circle, the hybridity of the game asserts itself against the illusionistic effect that was once so compelling.

New types of hybridity are also entering into traditionally 'bounded' gaming situations through internet connectivity. One example is the way that new games are hybridising in-game time with real-time elements. *Dragon Age: Inquisition*, for example, utilises a game mechanic called a 'War Table' in which they direct their subordinates to complete certain tasks. Regardless of whether the player logs in or out of the game, these tasks will be completed according to a real-world clock. The War Table thus opens up an interface effect between the game time and the rhythms of everyday life, providing an additional incentive to return to the game at regular real-time intervals.

A more comprehensive utilisation of an interface between game time and everyday life can be found in *Destiny*, which staggers its missions across real time periods (some can be done at will, some once a day, others weekly). While this is a structure that is common to many MMORPG games, *Destiny* is primarily a FPS: the requirement for internet connectivity in current generation consoles has facilitated the appearance of real-time structures in other genres:

Each day in *Destiny* resets at 1AM Pacific, 4AM Eastern. At Tuesday's reset, the new week also kicks over, meaning that your weekly mark cap resets, the weekly strike changes, and your raid progress and drops both reset (Hamilton 2015).

Another increasingly apparent hybridisation that is affecting conventional video games derives from the capacity to easily stream gameplay to the internet via sites such as Twitch.tv. A genre has formed around live play in which players specifically tailor their performances to be disseminated across YouTube or Twitch.tv channels. Often this will also involve interaction with viewers via the integrated chat stream (a prac-

tice prevalent enough that Twitch.tv has developed its own emoji idiom). A new element is added to the process of embodied spatiality of the game: one oriented to an interface with a distributed public. Many live streamers attest that exhibiting their performance in this way places new cognitive and performative loads on their embodied interaction with the game apparatus. This can therefore be classed as a new type of hybrid play in its own right. Popular livestreams are often made by expert players for the purpose of disseminating effective styles of play, an element that complicates Consalvo's (2007) notion of gaming 'paratexts'. Here, the paratext is not epiphenomenal: it is woven simultaneously as a new hybrid performance of a given game.

Video sharing gameplay is not the sole preserve of expert players. In fact, the most highly viewed YouTuber as of 2014, Felix Kjellberg or 'PewDiePie', has made his mark by failing in an entertaining fashion. Utilising a webcam setup so that viewers can see his reactions in an inset window, Kjellberg's most famous performances are of horror games such as *Amnesia: The Dark Descent*. In a powerful example of Farman's concept of how embodied spatiality is distributed through technological media, Kjellberg's audience jumps and screams along with his image projected across the livestream or in an archived video. Although distributed across the world, the hybrid play of the video stream is an interface that lets viewers participate in the horror game's intensive processes of generating spatial experience through the sensory-inscribed body. Another livestream of *Amnesia: The Dark Descent*, made by *Starcraft 2* commentator Sean 'Day9' Plott, saw Plott's friends send him text messages during the stream. Already terrified by the game, Plott's commentary expands from what is evidently a highly immersive game world to involuntarily hybridise this new device: "I don't know why I asked my friends to text me... my phone went 'bzz' and it frightened me. I just have to mute this so it doesn't freak me out so much." Slightly later in the stream, a text message causes Plott's phone to vibrate during a particularly harrowing gameplay moment, "Gah, stop it! Stop texting me! Who's watching? Friends! Don't text me! Leave me alone!" Here the intensive processes by which the horror game entangles physiological

and perceptual human capacities with various computer-generated stimuli are also distributed across the networked public of the stream, and the personal network defined by access to an individual's mobile phone number.

## POSTDIGITAL PLAY IN DOMESTIC SPACES

Whilst Tyni et al. treat the domestic space as a relatively neutral background in their analysis of hybrid playful products such as the *Skylanders* series, game studies could benefit from an engagement with research traditions such as technology domestication and parental mediation (Nansen and Jayemanne, forthcoming). These fields both add considerable complexity to the scholarly study of home life and the relations between family members, particularly in terms of children's access to technological devices. The rhythms of everyday life (Apperley 2010) thus exercise a powerful influence over hybrid play in the domestic space.

The advent of crowdfunding platforms such as Kickstarter has given impetus to many playful products that operate at intermediary economies of scale. While they are unique devices, many of these products rely on technologies that have already been subject to the process of domestication – such as tablets and mobile phones, which are often themselves hybrid ensembles of devices such as cameras, gyroscopes and so on – in order to operate. An example of this is Osmo, a crowdfunded augmented reality product that hybridises an iPad, a stand, a reflector that directs the device's camera towards the surface that it stands on, an app for download and physical game pieces such as a classic tangram. The app dynamically reacts to activities undertaken on the physical surface through several games, effectively turning the surface (typically, a table) into an interface.

Osmo's marketing video shows an adult in a pure white room setting up the tablet for play on a table. A child emerges out of this idealised domestic space and begins to manipulate the tangram pieces to create

shapes and perform other activities. This draws another child, and then more, until a crowd has formed. While this is a typically decontextualised advertising situation (nobody starts crying because they stepped on a tangram piece, for example), the robust feedback between the children's activities as they collect objects such as a toy dinosaur to place before the device and witness its response suggests a space in which many different processes of embodied interaction can be explored.

The operative aesthetic of childlike fascination and proliferating possibility is common to many of these devices. The intensive potentials for play exhibited by devices such as Osmo represent an aspect of postdigital gaming that we term an 'aesthetic of recruitment'. That is, an enrolment of player bodies and sensations that moves beyond the screen, as well as an enrolment of many different material and digital elements that may be distributed through the postdigital domestic space. This is a key selling point of the device, as attested by the way the video depicts both children and many varied objects coming together to configure Osmo's different interface effects and processes of sensory-inscription. Cameras and other types of sensors, when combined with appropriate apps, diversify the number and types of bodies that can be gathered within and through an expanded range of sensory-inscriptions in a given play situation. In turn, the apparent 'contagiousness' or fascination of playful behaviour encouraged by these devices informs the affective aesthetics of recruitment.

As noted, however, the sterile background of the Osmo advertisement does betray the fact that the system and its recruiting powers are curated for a very particular hybrid device: the advertorial camera. The aesthetic of recruitment is taken further still by MaKey MaKey, a circuit board which allows players to 'make anything into a key' by attaching alligator clips to objects. This then enables the objects to work as keys for inputting commands into a computer, opening up the objects of domestic space and beyond – bananas to stairs to tubs of water and even pets – to become recruited as new types of interface within a vastly expanded postdigital and material repertoire of hybrid play. MaKey MaKey adver-

tisements tend to take place in a far more cluttered *mise-en-scene* than those of Osmo, reflecting the wider gamut of objects and player behaviours which it can draw into a hybrid system. The digital elements are, however, less diverse: generally, the technology seems to have been used to control existing games such as PacMan or Super Mario Bros, but the physical and tactile experience of play is considerably transformed by the introduction of highly unorthodox materials into the interface. The aesthetic of recruitment thus expands the possibilities for new proprioceptive relations to game-space by forcing players to re-balance, re-configure and re-consider their habitual use of a versatile interface effect.

Osmo and MaKey MaKey represent two different styles or ‘grammars’ of postdigital recruitment. Osmo draws players *inwards* to a relatively bounded space to play with a set of pre-made physical objects that serve specifically designed digital games. MaKey MaKey (at least as advertised) pushes a pre-existing virtual game world *outwards* to hybridise with the environment and objects in new ways. The potentials for asymmetrical recruitment offered by the latter are greater than that of Osmo simply because of the sheer amount of objects that are available for recruitment, as well as the way to activate the powers or virtues of such bodies (a control scheme made of bananas ‘feels’ very different than one made of play dough). Despite the contrast of inward and outward recruitment emphasised by either Osmo or MaKey MaKey, in both cases we see the assembly of asymmetric sets of sensory-inscribed bodies – less a predefined interface than various sensory practices and digital materialities of interfacing.

## MOBILISING POSTDIGITAL PLAY IN PUBLIC SPACES

Sphero is a ‘connected toy’ consisting of a mechanised ball that can be rolled around by a phone app. In the ‘Sphero 2.0’ advertising spot, a rapid montage of the device rolling extends beyond domestic space and engages small groups of people to also move through public locales such as parks, beaches, city squares and so on. The marketing moves seamlessly from context to context in a world where everyone seems happy

to see it and be recruited in the fun. In reality, however, Sphero isn't really appropriate for many of the spaces it is shown moving through, on a train platform or the city square, where it is close to moving vehicles and weaving under the feet of passers-by. The public spaces Sphero is shown moving through have little bearing on the everyday uses of connected toys, rather they suggest and aestheticise the recruitment of 'the public'.

Where recruiting players and objects within the domestic space has its own set of concerns and issues, ethical concerns are more clearly pressing in public space. Issues of privacy and consent become critical because not everyone will want to be recruited into a particular game, and even if they do, ensuring that they understand the implications of their recruitment becomes a significant issue. This is evident in what was eventually an un-funded crowd funding campaign smartphone game, which wirelessly connects to a rubber grip with inbuilt sensors, called Hybrid Play. The setup had the explicit aim of transforming playgrounds into video games by attaching the sensor clip to play equipment, such that playing on the physical equipment controls digital game elements. The enrolment of children's outdoor play spaces and playground equipment raises ethical questions about the kinds of participants and audiences recruited in hybrid play arrangements, and in particular the potential for digital 'corruption' of traditionally physical materials and active interfaces.

However creating mobile interfaces in public space also creates opportunities for new scales and types of play such as locative, mixed-reality and pervasive games. Scale plays an important role in how these games operate. Large corporations such as Google's Niantic Laboratories have created location-based and mixed-reality games like *Ingress* (2012) and *Pokémon Go* (2016) that recruit large swathes of urban space. *Ingress*, for example, separates players into two factions who have varying philosophical approaches to an influx of 'exotic matter' and 'anomalies' into our world. Players utilise their mobile phones, along with an augmented



reality app, to locate and capture points in space, and by linking these points can establish areas of control (see Moore 2016).

The design of Ingress seeks to minimise the potential for players to overtly disturb or ‘recruit’ the people around them in two main ways. Firstly, the game’s fiction suggests that public sculpture is particularly prone to anomalies. This means that players are unlikely to stray into private property during their activities, and that the points are more likely to be located in highly-trafficked regions that will help players incorporate their gaming into everyday movements. Secondly, the ‘in-game’ actions are contained within the mobile phone device. When at a location, the activity of the players will not appear too different from a normal mobile phone user taking and manipulating a photo or video. Ingress thus carefully tunes the bodies of its participants such that their sensory capacities are magnified (through the augmented-reality app) while their culturally-inscribed behaviours are restrained – although this is not always successful, as loitering, repetitive movement and so on may still be perceived as suspicious in their own right (PiedType 2013).

This type of surreptitious public play can be contrasted with games in which postdigital public space and digital technologies interact in a more overt fashion, such as public games of Johann Sebastian Joust. Here the problem of recruitment is modulated by the clear ‘playful’ behaviour of the participants (moving their bodies and controllers in a bounded space), and connects with traditions of street art and theatre. One interesting space which highlights the role of the sensory-inscribed body and the process of recruitment, has involved the use of public transport tram networks in a locative game in which the location itself is mobile. The movement of the vehicle affects the physical design requirements of the game, while the movement of passengers on and off the tram means that recruitment has to be versatile. ‘Cart-Load-O-Fun’, a game designed for the tram system in Melbourne, Australia by researchers at RMIT University, took these hybrid dimensions into account by using pressure pads to make controllers out of the vehicle’s hand rails (Toprak 2013). Passengers could then partake in a game which allowed them to maintain

their balance in response to the acceleration and deceleration of the tram, while squeezing the pads and playing a digital game.

## DISCUSSION: INTERFACE THEORY AND POSTDIGITAL PLAY

We turn to theorising the aesthetic of recruitment installed in the above examples of postdigital interfaces by drawing on critical interface studies, and in particular Farman's 'mobile interface theory'. The concept of a *mobile* interface as suggested by Farman (2012) may seem like an odd one given that the common computing interface metaphor of a 'window' gives the image of a static mediating boundary between two spaces (one real and one virtual). In this metaphorical understanding, the interface is a facilitator of movement rather than being mobile in itself. The idealised 'user-friendly' interface almost disappears entirely, giving smooth and uncomplicated access from the world of flesh-and-blood users to immense vistas of digital content – as Bolter and Grusin put it, 'What designers often say they want is an 'interfaceless' interface... the user will move through the space interacting with the objects 'naturally,' as she does in the physical world' (2000, 23). The seeming straightforwardness of this conception has, however, been challenged by many scholars and designers, including Drucker (2011), who critically engages with interface theory to challenge the concept of the interface as a fixed thing rather than a performative relation:

Interface is a dynamic space, a zone in which reading takes place. We do not look through it (in spite of the overwhelming force of the 'windows' metaphor) or past it. The desktop metaphor at least suggests a space of activity in which icons stand for objects with behaviours we enact... If we usually separate what we think of as 'content' from the wireframes and display techniques, then we are performing acts of blindness (Drucker 2011, 9).

For Drucker, the desktop metaphor is superior to that of the window because it involves the manipulation and mobility of multiple objects across a dynamic surface, rather than the scopophilic 'view through a

window'. The interface concept has a broader remit than the digital technologies it is typically applied to:

We do not read content independent of interface on a screen any more than we do when we read the newspaper. We have only to strip away the graphical codes of a printed text – put its letters and words into a simple sequence, remove paragraphing, hierarchies, word spacing etc. – to see how dependent we are on these format elements as an integral part of meaning production' (Drucker 2011, 9).

Two major points arise from Drucker's discussion, both of which we have flagged in our examples. First, it is important to register the *asymmetry* of the spatial forms organised by interfaces: the metaphor of the transparent window should give way to that of the cluttered desktop. Where the spaces on either side of the window share an equivalent status, the hybrid space of the desktop is one characterised by the different powers, capacities and limitations of the objects that constitute it. Mediated space is thus not conceptualised as an empty opening in which things happen to take place; instead, it is produced in a set of operations that resemble Goffman's 'frame analysis' of social distinctions and the resulting 'organisation of experience' (1974). This is a point also emphasised by Cramer and Fuller (2008), who trace the historical usage of the term 'interface' to chemistry: 'Interfaces describe, hide and condition the asymmetry between the elements conjoined. The asymmetry of the powers of these bodies is what draws the elements together' (150).

Second, because interfaces are often useful to the degree that they are 'designed to dissimulate their function as interfaces' (Cramer and Fuller 2008, 152), they are often most apparent and legible at moments of *contingency*, such as when the functionality of a previously stable interfacial relation breaks down – we may take the complex operations of an in-game camera for granted until it bugs out at a crucial gameplay moment, for example. Reading is structured in graphical codes that 'perform a quasi-semantic function, not merely a formal or syntactic one' (Drucker 2011, 9). Stripping the expected conventions from the written word serves to make a message illegible, even if it is otherwise the exact same

sequence of signs. This failure exhibits the contingency of the codes that govern communications systems: broken down or taken out of context, they show themselves to be less universal and more prone to hybridity than we may habitually acknowledge. Here, Galloway's notion (2012) of hybridity as registered through various 'interface effects' construes interfaces as processes rather than objects of media. That is, instead of seeing an interface as a surface or media device, such as a screen or keyboard, moments of failure render visible their effects of mediation on the operation of sensory, cultural and material practices.

If the desktop has certain advantages over the window as a metaphor for the hybridity and diversity of interface operations, it may be less apt with regard to an increasingly postdigital world. Indeed, as Farman points out, one of the pioneers of ubiquitous computing ('ubiquitous computing'), Mark Weiser, wrote an influential piece in 1993 called 'The world is not a desktop'. While Weiser overtly makes the case for 'invisible' interfaces and computing, what is of more interest in this context is the way he goes about doing so: that is, by *expanding* the set of metaphors that we use when we think of how interfaces operate. In particular, Weiser criticises the tendency to imagine interfaces as replicating contemporary conscious forms and modalities of behaviour. Thus where the multimedia of the time sought to emulate the experience of legacy media such as TV, virtual reality sought to emulate unmediated experience, and intelligent agents sought to replicate human agents, Weiser suggests a certain, almost dialectical, relation between visible and invisible technology (and hence, interfaces between technologies and bodies):

Invisible technology needs a metaphor that reminds us of the value of invisibility, but does not make it visible. I propose childhood: playful, a building of foundations, constant learning, a bit mysterious and quickly forgotten by adults. (Weiser 1993, online)

Weiser's nomination of childhood as a metaphor for interfaces means that he has a claim to being a forerunner of thinking on ubiquitous digital play in addition to ubiquitous computing – or, at least, as a proposal of an intimate relation between the two fields of possibility. This is certainly

an aesthetic that MaKey MaKey and Osmo try to recruit. His description of the fertile and energetic potentials of ubiquitous computing resembles Caillois' (2006) notion of the freeform *paidea* more than the rule-bound *ludus*. The world is no more desktop (or for that matter, console) than magic circle. Digital play expands throughout the street, the home, the park, the workplace and beyond. Importantly, Weiser's metaphor of childhood speaks to processes both of constant learning (the negotiation and re-negotiation of asymmetric relations) and forgetting (entropy, failure and error). The potentials of diverse and pervasive playful computing shift the critical goal from analysing this or that bounded play situation, towards tracing and navigating the emergence of what Fuller calls 'seaminess' (2007) across which the asymmetrical powers of bodies for sensing, feeling and doing are enrolled and hybridised in postdigital situations.

## PLAY AND AN AESTHETICS OF RECRUITMENT

The postdigital calls for a conception of play that is capable of engaging bodies and flows that we cannot necessarily predict without arbitrarily reducing either the asymmetry or the contingency of the play situation – the very mobility of many of the devices crucial to hybrid play designs means that it is not possible to definitively pre-judge their context of use. The boundary of the play space must be left an open question. Adding to work by game studies scholars such as Mäyrä, Tyni and Montola, as well as the tradition of HCI scholars who have focused on embodiment since Winograd and Flores (1986) and Dourish (2001), here we propose to draw on Farman's 'mobile interface theory' (2012). This was developed to trace the locative and pervasive effects that arise in the use of devices such as mobile phones, and questions of navigation and the orientation of embodied experience are highlighted. Farman combines two major streams of thought – phenomenology and poststructuralism, with key references in Merleau-Ponty (1958) and Derrida (1998) respectively, in order to produce a theory of the 'sensory-inscribed body'. In this con-

text we will place the emphasis on the phenomenological aspects of the theory.

Phenomenology facilitates a focus on the integral relation between space, practice and body: *'embodiment is always a spatial practice... Bodies always take up space and, as Lefebvre argued, are spatial in and of themselves'* (Farman 2012, 19). A particularly important nuance of this claim is that *'embodiment does not always need to be located in physical space. As people connect across networks on a global level, what many are experiencing as they practise the space of the network is embodiment... we create our bodies across digital media'* (22). This creation involves the adoption of determinate spatial practices in which the interface – pace Drucker and Weiser – is liable to fade in and out of visibility. During a mobile phone call:

The interface of the phone typically recedes and you are moved into the space of conversation. If, however, there becomes an extended period of silence, the sense perceptions immediately pull focus from the other person to the device... You will move the phone away from your ear to look at the screen, determining if you are still connected, if your reception is strong, or if your battery has died (Farman 2012, 28).

The shift between the co-location of interlocutors to the surface of the phone screen constitutes two kinds of embodied spatiality; two distinct *'interface effects'* (Galloway 2012). Farman also gives a more complicated example, which will be familiar to many scholars, of a student's phone ringing during a lecture. The confused behaviour of the individual student, the lecturer and the rest of the class show different processes of embodied spatiality, which usually flow smoothly, brought into focus at their moment of failure.

Farman argues that these situations indicate a need to reconsider the seemingly simple distinction between the virtual and the real, *'For, if it were an accurate opposition, then that which is virtual would also be considered "not real"'* (2012, 22) – whereas the *'virtual'* interface and digital content do perfectly real things: the pairing *'virtual/actual'* is more helpful. He traces the concept of the virtual back to the term *'virtue'*,

as it was used until the late 1400s, in the sense of the ‘virtues’ or powers and abilities of a given thing. However, it is not always the case that all the virtues of an object are actualised at once (as in the case of the mobile phone in the lecture theatre, where multiple possibilities for behaviour are urgently possible at the one embarrassing moment). Where the virtual/real opposition is a symmetrical relation in which the virtual ‘mirrors’ the real, the virtual/actual opposition is ‘asymmetrical’ both because the set of virtual possibilities tends to exceed any actual result, and because every process of actualisation is different.

This virtual/actual pairing informs another crucial notion that Farman derives from phenomenology: the importance of the habituated aspects of our sensory and embodied experience. This once again speaks to the processes by which interfaces come into and recede from ‘visibility’ (although it might better be termed ‘perceptibility’ because this refers to all the senses and not just sight). ‘While those things that we are aware of and perceive are vital to our sense of being-in-the-world, our senses also work to block out much of the sensory input that we are bombarded with...Imagine that while you were having a conversation with someone, that every other conversation in the room and every sound in the room became equally important... We function as embodied beings because we do not notice everything or sense everything’ (27). The senses are not simply receptive, but actively screen and sort phenomena in the process of producing spatio-embodied beings. Phenomenology terms this process ‘proprioception’. At the same time, this sense of ourselves is *inscribed* by ‘cultural inscriptions of masculinity or femininity, the signifiers of our cultures, or sexualities, our religions, among other aspects of our embodied identity that we read in others and encode on our bodies for others to read’ (32).

Just as with our awareness of other subjects, objects can enter and become part of the process of proprioception that informs the sensory-inscribed body and its relations to foreground or background space. Where Merleau-Ponty uses the example of a person wearing a hat who instinctively ducks to clear a doorway without knocking it off, Farman

extends the logic to technological objects such as vehicles and locative media devices. We argue that this approach can also be fruitful in the context of doing game studies in the era of postdigital play by providing a means of analysing how sensory-inscribed bodies arise in asymmetrical and contingent play situations – an aesthetics of recruitment in gaming configurations.

Rather than an assumed situation in which elements are symmetrical (at least to the extent that they can mutually enter into hybrid relations of digital and material, dependence and independence) under ideal conditions (a magic circle of prescribed behaviours and neutral space in which new and potential hybridisations are left unregistered), tracing postdigital play interfaces enables us to account for how sensory-inscribed bodies with asymmetric powers cohere and dissipate in playful spaces, sensations and practices. The acknowledgement of asymmetrical powers in postdigital play is one way of responding to the agnology called for by Berry and Dieter (2015).

The postdigital interface helps us to analyse forms of hybrid play – in each case, we can pose questions about how spatial forms (locative, pervasive, bounded) are produced in relation to what types of sensory-inscribed bodies. This allows us to place the ‘panoply of devices’ foreseen by Weiser into relation with players’ sensuous and cultural capabilities. Postdigital games (keeping in mind that video games are, at least to a degree, natively postdigital) enjoin us to take account of how multiple performances and spatialities are produced by the ensemble of framing devices at work in a given gaming situation. The magic circle as outward bound, should it be observed in a particular case, is *produced* by the integral operations of the various participants in playful processes: multiple synchronisations and de-synchronisations, multiple processes which result in various degrees of dependency and autonomy. Any one of these processes may exceed any given object or product – and hence, it potentially troubles any analysis which relies on such a category because portable products can wind up in many different contexts that exceed their design parameters. We have argued instead for view-



ing postdigital play interfaces as an aesthetic of recruitment, in which an analysis of the asymmetry and contingency of hybridity emerges through attention to the various spatial domains, social practices, sensory experiences, and material actors that are enrolled into, and distributed across, assemblages of play.

## CONCLUSION

Engaging with critical interface studies and phenomenological theories of embodied action provides us with useful frameworks with which to study the burgeoning field of postdigital play. Moving beyond the metaphor of the window or the desktop towards the ‘panoply of devices’ imagined by Weiser, the interface approach seeks to account for how the asymmetrical powers of various bodies are organised in a given play situation – effectively, expanding the hybrid dimensions that we can analyse. This is particularly useful in the study of locative, pervasive and mixed-reality games because it helps us articulate how sensory-inscribed bodies and the hybridisations of play are co-generated in each case.

Drawing on concepts of the ‘interface’ and ‘postdigital’, our discussion has identified new hybridities in conventional games that are facilitating the emergence of new practices of play (as well as reaffirming the inherent hybridity of video games). It has also explored the interface effects that are being created in domestic and public spaces, which operate to create new relations between digital and material elements. Organised less around the interface as a determined object than around spaces, bodies, and practices of interfacing with increasingly undetermined digital materialities, we have proposed the term an ‘aesthetic of recruitment’.

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# Creating Stealth Game Interventions for Attitude and Behavior Change

An “Embedded Design” Model

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## ABSTRACT

Persuasive games tackling serious issues in a literal, explicit fashion are far less likely to succeed in changing attitudes or behaviors than are games that take the more “stealthy” approach of embedding persuasive messages within a game’s content or context. The “Embedded Design” model, developed by the design and research team at Tiltfactor Laboratory at Dartmouth College, offers novel, evidence-based strategies for including persuasive content in a game in ways that circumvent players’ psychological defenses, triggering a more receptive mindset for internalizing a game’s intended message, and do so without sacrificing players’ enjoyment or the game’s inherent replayability. Such techniques promise to revolutionize the repertoire of techniques that game developers should consider in broaching and presenting serious topics in games. Three original “Embedded Design” strategies are presented here: (1) *Intermixing*:

balancing “on-message” and “off-message” content to render the former less overt or threatening; (2) *Obfuscating*: using framing devices or genres that divert expectations or focus away from the game’s persuasive intent; and (3) *Distancing*: employing fiction and metaphor to increase the psychological gap between players’ identities and beliefs, and the game’s characters and persuasive content.

## Keywords

Persuasive games, attitude change, behavior change, embedding, game design

## INTRODUCTION

The past several decades have seen the emergence of a plethora of persuasive games that aim to increase players’ awareness of critical and timely social issues – and to change players’ attitudes and behaviors – through gameplay (Bogost 2007). Running the gamut from games targeting cognitive biases that reduce the accuracy of judgment and decision making (e.g., the SIRIUS initiative of the Intelligence Advanced Research Projects Activity program: Dunbar et al. 2013) to those intended to encourage behaviors that benefit society (such as recycling in the case of the mobile game *Gaea*: Centieiro, Romão, and Dias 2011) or the self (e.g., the reduction of substance abuse and HIV risk, which is the focus of the “Play2Prevent” program: Fiellin et al. 2014), this subset of “serious games” is united by their intention to transform mindsets and actions through the messages they model.

Games themselves are powerful means of enculturation (Flanagan 2009). A vast majority of serious games, however, share a common design philosophy: by and large, they present characters, scenarios, situations, and solutions in a direct, matter-of-fact fashion under the ostensibly logical (and well-intentioned) assumption that doing so will automatically encourage and enable players to internalize and transfer the game’s modeled beliefs and behaviors to real-life contexts.

In light of what is known in contemporary psychology, this approach, we argue, is ill-advised at best and potentially harmful at worst, particularly when dealing with persuasive content that is uncomfortable, psychologically threatening, or counter-attitudinal. A vast body of social psychological theory and research on persuasion and attitude change has long demonstrated that it is a basic human tendency to resist persuasive communications that are perceived as too forceful or forthright in their intentions. For one, being aware that some external agent is aiming to change one's attitudes or behaviors triggers psychological *reactance*: an aversive state of arousal that arises whenever one perceives that his/her freedom to do or think freely is being threatened (Brehm 1966). The aversive state of reactance raises individuals' psychological defenses, rendering them less receptive (and, indeed, more resistant) to a persuasive message. What is even more surprising is that psychological reactance will occur *even if a person's own beliefs align with the content of the message* (e.g., Worchel and Brehm 1970).

A second psychological barrier that comes into play in situations of persuasion and play, especially when dealing with attitudes and behaviors of a particularly sensitive nature (such as the hot-button issues of stereotypes and prejudice), is the *bias blind spot*: the acknowledgment that biases exist but the denial or minimization of one's own susceptibility to those biases (e.g., Pronin, Lin, and Ross 2002).

The potentially aversive and defensive reactions triggered by explicit persuasive attempts limit not only the potential efficacy of game-based interventions, but also players' enjoyment of them, for the perception of a persuasive agenda is inherently antithetical to players' immersion within a game world (and, indeed, antithetical to the notion of *play* itself: see de la Hera Conde-Pumpido 2013; Huizinga 1938). In other words, most persuasive games may fail to engage players, let alone immerse them in a transformative experience, due to normal psychological human reactions to overtly "message-driven" interventions.

For this reason, we propose that persuasive games would greatly benefit



from using a subtler, stealthier approach to presenting their focal messages or themes. This line of thinking is directly informed by our team's research at the Tiltfactor Lab, which has, for over a decade, sought to tease out effective means for fostering social engagement and enacting persuasive, prosocial interventions in game design. Under the direction of Dr. Mary Flanagan, the laboratory team has been building a body of evidence showing how games can significantly shape perceptions and change ways of thinking. The lab started by creating more "statement" style games that explored issues as matters for debate or conversation; these games were assumed to impact or inform the players in the same fashion as documentary films and other similar art forms. Through time, the team has shifted to focus more on an evidence-based approach to design, using formal experimental methods and a psychologically grounded approach to demonstrate our games' impact on players. As this evolution has occurred, the team has developed novel strategies, including those discussed in this paper, to address controversial topics, such as public health attitudes and social and cognitive biases, in a more nuanced, less direct fashion. In this paper, we propose our novel model of "Embedded Design" that offers key strategies for tackling social issues and including persuasive content in a game in ways that circumvent players' psychological defenses, trigger a more receptive mindset for internalizing the game's intended message, and do so without sacrificing players' enjoyment or the game's replayability.

## THE "EMBEDDED DESIGN" MODEL

The key premise of the Tiltfactor Embedded Design model is that the persuasive impact of game-based interventions is greatly enhanced when interweaving a focal message within the game's content, mechanics, or context of play, rather than making the message or the game's persuasive aims the focal point. Through our team's longstanding work in the design and study of games intended to shift attitudes and behaviors, we have uncovered a number of distinct embedding strategies that have proven effective at increasing our games' persuasive impact (see Figure 1). This

work is informed in part by the Values in Design and the Values at Play methodology, which offers many avenues through which values might emerge in any given game experience (see Flanagan and Nissenbaum 2014).

In this paper, we will focus on three distinct strategies, each representing a unique manifestation of Embedded Design, that have emerged thus far in our work: (1) *Intermixing*: balancing “on-message” and “off-message” content to render the former less overt or threatening, and more palatable and approachable; (2) *Obfuscating*: using framing devices or genres that divert expectations or focus away from the game’s persuasive intent; and (3) *Distancing*: employing techniques, such as the use of fictional or metaphorical representations of key issues or themes in order to increase the psychological gap between players’ identities and beliefs, and the game’s characters and persuasive content. In the sections that follow, we expound upon these three strategies and provide concrete examples of our team’s game designs to illustrate their implementation and cite the results of empirical investigations that support their efficacy.

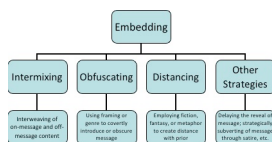


Figure 1: The “Embedded Design” Model.

### Embedding through “Intermixing”

One means of embedding persuasive content within a game’s design is a strategy we have come to refer to as “intermixing”: balancing or interweaving on-topic content with playful but persuasively off-topic (or off-focus) content that either distracts from the intended message of the game or helps ease players into the game’s message or aims. This strategy, when implemented effectively, reduces the likelihood of players experiencing the game as a top-down attitude or behavior change intervention, and offsets the serious (or potentially uncomfortable) tone of the

“on-message” components of the game with content that has comparatively more levity or humor.

Our team has implemented and tested the intermixing strategy in several game designs. To cite one illustrative example, *Awkward Moment* (2012) is a party game for pre- and early-adolescent players that aims to reduce social biases, including gender stereotypes in science, technology, engineering, and math (STEM) domains (see Figure 2). In *Awkward Moment*, players begin with a hand of five “Reaction Cards”; these cards describe potential responses to the game’s “awkward moments,” including actions (e.g., “Scream your head off,” “Write a blog post about it,” “Talk it out”), exclamations (e.g., “Rats!” “OMG,” “No way!”), and frames of mind (e.g., “Get serious,” “Relax,” “Channel your inner warrior”). During each round, one player serves as the “Decider” and draws a “Moment Card” that poses a hypothetical situation (e.g., “Somebody hacks your Facebook account and changes your status to ‘Girls are stupid.’”), to which the other players respond by submitting a Reaction Card face-down. The Decider then reads each of the submitted cards and selects a winner for the round. The game aims to stimulate thought and discussion about responses to social and academic dilemmas, particularly situations that involve bias against girls and women in STEM. A subset of the cards in the Moment deck presents situations in which a female is a target of stereotypes. In some situations, players imagine *being* a target themselves. The game’s deck of Moment cards contain examples depicting both on-topic scenarios related to gender bias in STEM (see Figure 2 for an example), as well as off-topic scenarios presenting awkward situations that do not directly pertain to social biases (e.g., “You sit on ketchup” or “There’s a secret ‘Ugly Poll’ at school, and you find out you were Number 3 on the list”).

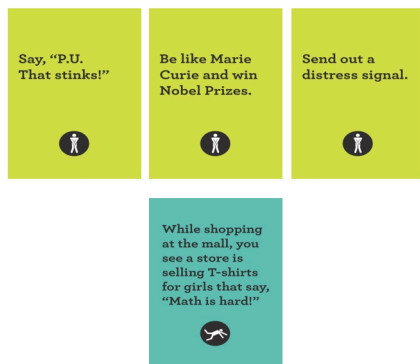


Figure 2: Sample Reaction Cards (green) and sample Moment Card (blue) from *Awkward Moment*.

A key question that guided the iterative design of *Awkward Moment* was the *ideal ratio* of on-topic to off-topic Moments in the game. In line with the intermixing strategy, our empirical research showed that presenting a *lower* ratio of bias-themed to non-bias-themed Moments proved much more effective in shifting players' attitudes and perceptions. One of our controlled experiments (Kaufman and Flanagan 2015) revealed that youth participants who were randomly assigned to play an "intermixed" version of the game (with approximately 45% of the Moment cards depicting gender bias in STEM) exhibited statistically significant higher post-game levels of perspective-taking, compared to participants assigned to play an "overloaded" version of the game (with 75% of the Moment Cards pertaining to bias). In another experiment, an "intermixed" version of the game produced a threefold increase in players' likelihood of associating women and science after one gameplay session. In both of these studies, we observed little evidence of players noticing, let alone reacting against, the game's persuasive content because it was not the ostensible subject or focus of the game.

An additional study involving a new version of the game for adults (depicting workplace scenarios) and utilizing the same methodology as the aforementioned experiment revealed the same pattern of results with adult participants. Those participants assigned to play an "over-

loaded” version of the game exhibited significantly greater negative affect (including the distinct response of feeling “fed up” by the end of the game) and a *lower* level of concern about the issue of social biases, compared to participants assigned to either an “intermixed” game condition or a no-game control condition (Kaufman and Flanagan 2016A).

In sum, these findings confirm that over-representing serious, persuasive content within the game triggered players’ reactance – and that this defensiveness prevented them from shifting their mindsets and perceptions after play.

In recent work, we have explored how the intermixing strategy might also be effectively implemented in a game’s presentation of diverse characters as a means of reducing gender bias in STEM. In the time travel-themed strategy game *The Luminists*, players compete to “restore” the most scientific and technological discoveries that have been undone by the unraveling of time by “recruiting” real-life STEM role models whose skills and expertise assist them in their quest. In line with prior work demonstrating the beneficial impact of exposure to counterstereotypical role models for lowering social biases and increasing STEM aspirations and pursuits (e.g., Dasgupta and Asgari 2004), the primary underlying goal of the game was to present a host of positive female STEM role models to young female players. At the same time, we predicted that “intermixing” female and male STEM role model “luminists” (rather than presenting a higher ratio of female to male luminists) would enhance the efficacy of the game – both by making the intended goals of the game less overt and by reinforcing *equity* rather than imbalanced participation in STEM between the genders. An initial experimental study involving a sample of female youth participants supported this prediction (Kaufman and Flanagan 2016B). In this study, we compared two versions of the game that differed in their ratio of male-to-female scientists in the set of eight presented to players – one in which there were equal numbers of male and female scientists and one in which six of the eight scientists were female. Results revealed that, compared to participants in a no-game control condition, participants assigned to play the “intermixed” version of the game (but *not* those assigned to the “imbalanced”

version) exhibited significantly higher levels of psychological connection to the game's luminists and, as a result, greater aspirations to pursue computer programming and other STEM careers and higher self-efficacy in STEM.

Intermixing is counterintuitive. On the surface, the strategy may seem as though it would be less effective. Yet, despite the fact that players are exposed to *less* focal content (e.g., fewer scenarios depicting occurrences of bias in *Awkward Moment* or fewer female role models in *The Luminists*), they are significantly more likely to accept and internalize (rather than reject and defend against) the game's underlying persuasive aims and messages. Our work to date has shown that the "intermixing" strategy of balancing or interweaving on-topic, focal aspects of a game with off-message or off-topic content, plays a central role in determining the efficacy of our persuasive games.

#### Embedding through "Obfuscating"

The second broad Embedded Design strategy that we have employed with great success is "obfuscating": concealing or obscuring the true persuasive intent of a game by employing devices that divert players' attention and/or allow for the covert introduction of persuasive themes or elements. One primary example of the obfuscating method is the decision to employ a game *genre* whose associated goals or expectations do *not* include the aim to change players' attitudes, beliefs, or behaviors. Indeed, our choice to design the aforementioned *Awkward Moment* as a fast-paced, social party game was a wholly intentional one. Triggering (and fulfilling) the anticipation of a fun, interactive play experience with an abundance of levity and laughter (achieved in part through the game's "intermixing" of both serious and silly, or absurd Moments and Reactions) created a "safe" space for players to encounter and react to the game's heavier, on-message content with greater comfort – and greater candor. Our team's extensive playtesting and iteration of the game provided consistent support; through both unobtrusive observations of play sessions and post-game interviews with youth testers, playgroups gen-

erally approached the game with a strong and sustained spirit of levity and amusement, yet rarely showed signs of subverting the game's more serious moments (or Moments), even among older, more experienced (or even more 'jaded') players at venues such as the PAX or GenCon gaming conventions. Moreover, even when asked directly what they believed the true goals of the game to be, players rarely identified the game's primary aim of challenging gender stereotypes in STEM domains, but rather focused more broadly on the game's general focus on reacting to a variety of social situations (further evidence of the successful implementation of the "intermixing" strategy) as well as a number of genre-consistent goals, such as the enjoyment of the game's social dynamics and the amusingly random or serendipitous pairings of Moment and Reaction cards that emerged.

In developing a second game with the same primary aim as *Awkward Moment* – to combat stereotypes and reduce prejudices – we went even a step further in using the party game genre to obfuscate the underlying goals. *Buffalo: The Name Dropping Game* (2012) is ostensibly a rapid-fire group trivia game: players flip a card from each of the game's two decks (one containing adjectives and the other nouns) and race to be the first to shout out the name of a real or fictional person who matches the revealed pair of descriptors (see Figure 3). What most players do not realize (and, as playtests and interviews have revealed, are quite surprised to learn) is that the game's deceptively simple design was based on an established psychological premise: exposure to a plethora of counter-stereotypical or otherwise unexpected exemplars (to which players are necessarily exposed given the game's random pairings of attributes and social categories) reliably reduces individuals' levels of stereotyping and prejudice. In a given play session, for example, players may be invited to name such diverse exemplars as a "charismatic techie," "rugged fashion designer," "tattooed visionary," and "Iranian poet." Indeed, our own controlled experiments investigating the impact of *Buffalo* (Kaufman and Flanagan 2015) revealed that players of a single session of the game, compared to participants in a no-game control condition, exhibited significantly higher levels of *social identity complexity*

(i.e., greater diversity and inclusiveness in their perception of their primary identity groups, which is a predictor of tolerance and egalitarianism: Roccas and Brewer 2002) and *universal orientation* (i.e., a measure of global non-prejudice: Phillips and Ziller 1997). Thus, despite (or, we would argue, *because of*) players' general failure to realize or recognize the game's persuasive goals and mechanism, the game successfully shifts players' conceptions of their own and others' identities simply by virtue of playing the game and both offering and being exposed to a plethora of exemplars of cross-cutting identity groups and associated traits. Moreover, even in cases when players recognize how their own biases might have influenced their performance in the game (e.g., one playtest participant regretfully reflected on his and his group's failure to name a "Hispanic lawyer," despite the fact that Sonia Sotomayor had recently been appointed to the Supreme Court), they by and large do not realize that this was, in fact, a focal outcome intended by the game's designers.



Figure 3: Sample card pairing from *Buffalo: The Name Dropping Game*.

With both *Awkward Moment* and *Buffalo*, we employed yet another means of obfuscation, one that is particularly rare among persuasive games: we deliberately avoided disclosing the aims of the game in the descriptions provided to players on the game box and in the instructional materials, and instead used deliberately neutral language to present and explain the game. This choice of neutral language represents a second obfuscation strategy: the use of *framing* devices that emphasize features of the game other than its focal subject matter or persuasive aims. Indeed, we predicted that simply revealing before play that either game



dealt in some way with social biases and stereotypes could dramatically reduce players' enjoyment of the game or the game's impact, in part because such "forewarning" would likely raise either conscious or unconscious defenses in players to resist the game's perceived intent. An initial pair of randomized experiments (Kaufman and Flanagan 2015) suggested that this was indeed the case. Holding all other game elements constant, adolescent players of *Awkward Moment* who were randomly assigned to a "stereotype frame" condition (and were informed prior to play that the game dealt with "awkward social stereotypes"), compared to those assigned to a "situation frame" condition (who were told the game dealt with "awkward social situations") reported finding the game significantly less fun and immersive and failed to exhibit significantly less movement in their rejection of gender stereotypes. Likewise, playgroups who were told that *Buffalo* explored "pop culture stereotypes" (compared to "pop culture knowledge") did not show a reduction in their levels of prejudice, as assessed by the measure of universal orientation described above. These findings illustrate the basic premise of the "Embedded Design" model: persuasive games that overtly telegraph their intended purpose of shifting attitudes and mindsets are likely triggering mindsets in players that hinder the game's enjoyability and blunt its potential positive impact.

In addition to the selection of genres and the employment of framing language that diverts attention away from a game's true "message," one final obfuscation strategy that we have applied is the *delayed revelation* of potentially threatening, counter-attitudinal, or alienating features or elements. Specifically, we have explored this technique to encourage greater psychological connection and higher levels of *experience-taking* with characters (Kaufman and Libby 2012): that is, greater immersion into the role and persona of protagonists in narrative and game worlds, particularly ones who belong to social "outgroups." This technique has previously proven effective for written narratives: for example, revealing a character's racial or sexual orientation outgroup membership *later* in a short story (once a psychological connection between reader and character had begun to take root) not only facilitated higher levels of expe-

rience-taking but also reduced prejudice levels toward the represented outgroups (Kaufman and Libby 2012). That is, initially obfuscating the potentially distancing (or stigmatizing) group membership of the character ultimately increased readers' receptiveness of the character's identity – and profoundly enhanced the persuasive impact of the story.

More recently, our team successfully applied this technique to encourage higher levels of experience-taking among male youth in our strategy board game *Monarch*, which puts players in the role of sibling princesses competing for the throne. Given the persistence of social norms that discourage “gender-swapping” play, particularly among boys (e.g., Martin 1990; McCreary 1994), we anticipated that revealing their character's gender prior to play would reduce experience-taking among male adolescent players. Conversely, in line with prior research, withholding this revelation for several rounds (during which players became acquainted with their characters and were gradually exposed to subtle clues about their true identity, including the use of gowns and pageantry as political instruments in the game) should more effectively ease players into their cross-gender roles. This was indeed the case: a controlled experiment (Kaufman and Flanagan 2016C) revealed that a sample of male youth randomly assigned to play the “delayed revelation” version of the game, compared to those assigned to an “immediate revelation” version, reported higher levels of experience-taking with their princess characters *and*, moreover, exhibited greater rejection of stereotypical gender norms (e.g., rejection of the association between “female” and “emotional” or “weak”) following gameplay.

#### Embedding through “Distancing”

The final Embedded Design strategy that we have explored in our work is the use of “psychological distance” (Trope and Liberman 2010) to create a safe space between individuals and the serious or sensitive themes or topics explored or modeled by a game. By separating players from their real-life identities and prior knowledge, beliefs, and experiences, persuasive games can effectively circumvent players' reticence or reluc-

tance and enhance the game's transformative potential – particularly in subject matter domains that may be uncomfortable or counter-attitudinal. By its very nature, an absorbing, immersive game should trigger a high level of psychological transportation (Green and Brock 2000), thereby distancing players from their real-life surroundings and true identities, which prior work has shown sets the stage for higher levels of enjoyment (Green et al. 2004) and persuasion (Green and Brock 2000; Green, Brock, and Kaufman 2004; Kaufman and Libby 2012). Indeed, we would argue that persuasive games that take too overt or literal an approach in their handling of controversial or sensitive topics have inherently less capacity to transport their players (and to provide an enjoyable experience) because they create too *little* psychological distance to explore those topics in a non-threatening fashion.

Beyond the psychological distance afforded by a highly transporting game, however, there are a number of specific distancing strategies that designers can use to increase the gap between players' real-life experiences and the ideas, encounters, and interactions that await them in the game. These strategies are derived from a number of distinct manifestations of psychological distance revealed by prior work (Trope and Liberman 2000). Perhaps the most elementary forms of distance is *hypotheticality*: rather than presenting situations that are drawn directly from players' real-life experiences (or situations that attempt to replicate or mirror those experiences), encouraging players instead to engage in "what if?" scenarios provides a safe "buffer" to explore even the most sensitive topics. Indeed, the value of hypotheticality was a key decision point in the design of *Awkward Moment*: each of the game's Moment Cards present a purely hypothetical situation and invites players to consider a host of alternative ways of responding. Rather than placing the players and their embarrassing moments or experiences with bias in the spotlight, the game allows players to envision and select responses for the unidentified, second-person "you" described in each of the game's Moments.

A second distancing mechanism that we utilize in our work is the *fic-*

*tionalizing* of real-life issues and events – that is, the embedding of those elements within symbolic, fantastical, or metaphorical representations. This technique is by no means a new one: the use of fiction to disguise the focus or target of a story may be as old as written language itself. What is distinctive in our approach to using fictional representations in games is our endeavor to systematically compare different levels of explicitness (versus “embeddedness”) in those representations. To cite one example of this approach, our team has designed and studied two versions of the public health board game *POX: Save the People* (2011) which is intended to promote positive attitudes and valuations toward vaccination: one version (*POX*) that presented a relatively straightforward, realistic narrative about disease spread, and one version (*ZOMBIEPOX*) utilizing a more fantastical narrative about the spread of a “zombie plague” (see Figure 4). Both games share the same essential rules and mechanics concerning the spread of infectious disease and the modeling of vaccination as an effective strategy for curtailing that spread, but differ in the level of distance afforded by their representation of disease, infection, and death (or “un-death” in the case of *ZOMBIEPOX*). A pair of controlled experiments comparing the impact of both games on both adult and youth players revealed parity between the games (compared to a no-game control condition) in terms of their impact on players’ valuation of vaccination as a public health solution. At the same time, however, players of the *zombie-themed* version of the game reported higher levels of psychological transportation and higher levels of empathic concern toward individuals with infectious diseases, as assessed by self-report measures (Kaufman, Flanagan, and Belman 2016). Thus, the use of a more distanced, metaphorical representation of disease was not only effective in shifting attitudes toward a real-life health policy issue but, indeed, even *more* effective than the less distanced, realistic narrative at forging a bond of compassion between players and the real-life individuals symbolized by the zombies in the game. This finding lends further credence to our view that persuasive games utilizing elements of the Embedded Design model (such as distancing)

are likely to be experienced as more transporting by players – and, consequently, more impactful at changing hearts and minds.

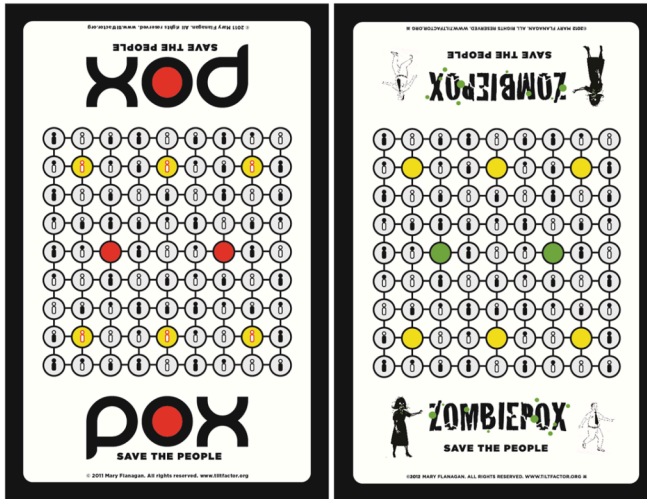


Figure 4: POX and ZOMBIEPOX game boards.

In upcoming work, we will be exploring the benefits of fictionalized distancing for individuals creating narrativized accounts of their own real-life experiences – specifically, personal reflections on their experiences being the target of others’ stereotypes and biased expectations, judgments, or behaviors. This project will explore the therapeutic and cathartic value of creating interactive “text adventures” that are based on stressful or traumatic real-life occurrences but provide creators with the safety (and creative license) afforded by the fictionalized re-telling and recounting of those life events. In this stream of research we will investigate the effects of writing interactive narratives that are more fictionalized, versus more strictly autobiographical, as well as the impact of a number of other distancing mechanisms, such as the narrative voice (e.g., a more distanced 3rd person voice versus the less distanced 1st and 2nd person perspectives) employed by authors, on the emotional benefits of narrativizing one’s own lived experiences.

## CONCLUSION

The Embedded Design model offers a number of easily implementable, evidence-based techniques that promise to revolutionize the ways that game developers tackle serious content issues and make more effective and more enjoyable games. As illustrated by examples from our own game designs and accompanying empirical work, the more covert, “stealthy” approaches derived from the Embedded Design model result in persuasive games that are remarkably more transporting and impactful, compared to games in which the message or material is presented more overtly or directly (see Kaufman & Flanagan, 2015). Additionally, the model advances the conversation around the application of psychological principles in games, and builds on other theoretical and practical formulations for understanding games, such as models of game design patterns (Bjork and Holopainen 2004).

The data emerging from empirical work on the use of Embedded Design (via techniques such as intermixing, obfuscating, and distancing) demonstrates that such techniques invite a more open mindset, one characterized by a reduced level of activation and accessibility of players’ self-concept and predispositions, attitudes, and beliefs. Such a mindset circumvents the psychological resistance that players are likely to experience to more overt, explicit game “interventions,” and, further, sets the stage for players to approach and internalize new information and ideas, take on new perspectives and roles, and understand concepts or principles in a comparatively unbiased fashion. Indeed, the power of the embedded approach is that it offers design solutions that have the potential to be equally effective for both individuals who may already endorse a particular stance as well as those who may initially be opposed or indifferent to it. These strategies can enable games that address social issues to have a much broader impact.

It is important to note that the strategies described here are by no means intended to be comprehensive. Our team has just begun to discover the potential of such techniques. Each new game project we (and others)

take on sets the stage for new manifestations and applications of Embedded Design to emerge and, as a result, extend, enhance, and refine the design model introduced here. Moreover, although the game case studies we presented here to exemplify the model were non-digital, the principles and practices suggested by the model are intended to be broadly implemented across all game platforms and media delivery formats. Indeed, the greater flexibility and control afforded by the creation of digital games (e.g., in their revelation of information or representation of characters) open up a world of new possibilities for embedding that designers can consider, implement, and test in their own work (e.g., see Christiansen 2014).

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# Hackers and Cyborgs

## Binary Domain and Two Formative Videogame Technicities

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### ABSTRACT

Through the course of *Binary Domain*'s action-packed narrative, it becomes increasingly unclear who is human, who is machine, and who is somewhere in between. Ultimately, such a distinction is futile when our everyday experiences are so ubiquitously augmented by technologies—even the act of playing *Binary Domain* by coupling with a virtual character through a videogame controller challenges any clear distinction between human and machine. While such themes are not new to science fiction, the anxieties expressed by *Binary Domain*'s characters are relevant to what have emerged over the past twenty-five years as two formative modes of identifying with videogames: the dominant hacker and the integrated cyborg. The hacker, an identity that the dominant and hegemonic 'gamer' consumer identity can trace a clear lineage from, comes to represent the masculinist, mastery-focused identity that most blockbuster games celebrate. The cyborg emerges in resistance to the

hacker, pointing to a diversity of forms and identities that are focused less on mastering the machine than participating with it. This paper uses *Binary Domain*'s complex anxieties towards technology as a lens through which to trace the histories of these constitutive modes of identifying with videogames, and to demonstrate the influence they have on videogame forms and audiences.

## Keywords

Cyborg, hacker, gamer, Binary Domain, technicity, criticism, feminism, analysis

## INTRODUCTION

After a skirmish with a robot army early in Sega's *Binary Domain* (2012), Big Bo raises his gun at the slum kids who creep out of the shadows to salvage the scrap metal. "No!" the playable character Dan Marshall warns his companion. "They're human!" Big Bo looks back at the children suspiciously, "And how the hell can you tell that?" Dan is incredulous: "How in the hell can't you?" [1]

What it means to be a 'human' is a notion constantly challenged by the pervasive presence of technology in our everyday lives. Pacemakers, prosthetic limbs, automobiles, GPS, internet connections all mediate and alter existence. For Donna Haraway, late twentieth-century machines challenge a range of conceptual dualisms that have long held dominant sway: "Our machines are disturbingly lively, and we ourselves are frighteningly inert" (1991, p.152). To account for—and to embrace—this rising ambiguity between mind and body, natural and artificial, human and machine, Haraway finds a productive metaphor in the figure of the cyborg, a hybrid of machine and organism. Videogame play in particular is a vivid and explicit performance of the cyborg, as scholars have noted (Lister et al 2009; Dovey and Kennedy 2006; Giddings 2008). To play a videogame is to both expand and constrain bodily ability through technological augmentations (controllers, motion sensors, touchscreens)

and to both step into and become part of an integrated circuit of human and nonhuman actors (Giddings and Kennedy 2008). However, at the same time, the dominant identities cultivated around the videogame form by marketing and enthusiast press discourses are those of humanist (and masculinist) empowerment, agency, and choice: strong space marines, efficient racing cars, god-like (and god-eyed) strategists. Such dominant understandings of how players engage with videogames see players less as integrated and participatory cyborgs and more as dominant hackers: *using* the technology to do what they want it to do, to make the choices they want to make, to beat the technology, to win. Yet, with the rise of DIY or ‘zinester’ games at one end of the game design spectrum (Anthropy 2012) and casual and mobile games at the other (Juul 2010), the core ‘gamer’ identity that values autonomy and mastery is increasingly contested by newer modes of identifying with videogames that shift the focus back towards more earnestly restrictive engagements concerned with the player’s participation rather than their domination. Two formative conceptualizations of the player thus emerge: the player as determining and in charge and ‘using’ technology, and the player as partially determined by and integrated with technology.

Through the anxieties and tensions between humans and machines expressed by *Binary Domain*, this article demonstrates how these two modes of identifying with and evaluating videogame forms are fruitfully explored as two formative *technicities*. By ‘technicity’ I draw on Tomas’s coining of the term in his exploration of William Gibson’s *Sprawl* novels where Tomas forwards technicity to account for the “different systems of identity composition” that emerges in “cyborg-dominated culture” (1989, p.123), and I rely on the work of Dovey and Kennedy (2006) who productively build on Tomas’s outline to bring a discussion of technicity directly to videogame culture. Concerns of technicity intersect with concerns of gender, ethnicity, and class to account for how particular social and cultural relationships and power dynamics are formed through technological competency, access, and literacy. Further, technicity provides a way to explore how certain modes of identifying with technology become dominant and hegemonic to obscure a myr-

riad of other “marginal, subaltern or oppositional identities which define themselves in reference to the dominant group” (Dovey and Kennedy 2006, 64). Videogames, as this article’s analysis will demonstrate, privilege the hegemonic power of the ‘hacker’ technicity that underlines the ‘gamer’ identity while marginalizing those videogames and their players that value technological engagements beyond the strictly ludic ones of goal-based mastery and challenge. A discussion of these dominant and alternative technicities is particularly relevant at this time. The past five years have seen the emergence of a variety of videogames that conflict with traditional modes of understanding the videogame form, and the past twelve months in particular have seen provoking discussions in popular videogame discourses as to just what videogames ‘should’ do and who they are made for, as seen in various recent creator manifestos committed to treating the player as less than central (Brice 2014; Polansky 2014; Kopas 2014).

*Binary Domain* is set in a near-future, post-climate change world where the need for a massive labor pool to rebuild the sunken cities of the world motivates swift advancements in robotic technologies. However, with new technology comes new anxieties. The United Nations passes a New Geneva Convention that inscribes into international law the banning of creating robots that could pass as human. As the game begins, the player’s protagonist, Dan Marshall, joins a UN Security Council-sanctioned task-force known as a ‘Rust Crew’ to infiltrate Japan, returned to isolationism, to investigate a suspected breach of the New Geneva Convention by the Amada Corporation. There is reason to believe that Amada has not only created robots that pass as human, but that these robots themselves are unaware of what they are, living their day-to-day lives unaware that they are, in fact, not ‘real’ humans. The game plays as a standard third-person shooter, where the player navigates Dan to cover before shooting at advancing robotic armies. The game’s narrative, however, unfolds more complexly against this mechanically conventional backbone. It becomes increasingly unclear just who is human and who is machine as suspicion turns to each of Dan’s allies and enemies in turn before turning, finally, to the *Binary Domain* players them-

selves. Late in the game, after one particularly difficult skirmish, one of Dan's allies mockingly compliments Dan's prowess and asks if he is sure he is not part robot himself. Dan, controlled and augmented by a player wrapped around a videogame controller and facing a television screen, fights so well and is so strong that his squadmate suspects that he may not be a 'real' human. This squadmate, ironically, suggests that the assemblage of flesh and machine that allows the character to perform so admirably (playable character, virtual camera, and a corporeal player entangled with videogame hardware) might be a cyborg.

Through its explorations of the tensions between humanism and posthumanism, *Binary Domain* aligns itself with a long lineage of science fiction works in a variety of genres. Films like *Blade Runner* (Scott 1982), *Metropolis* (Lang 1927), and *Bicentennial Man* (Columbus 1999); and books like *The Windup Girl* (Bacigalupi 2009) and *Neuromancer* (Gibson 1984) all explore the increasingly blurred line between human and technology; or perhaps more accurately, that such a line was only ever a conceptual fantasy. Whereas films and literature can only ask the audience to reflect on how such human-technology hybridizing already functions in their everyday life, the "literally cyborgian" performance of videogame play (Lister et al. 2009, p.306) augments the player's bodily actions with technological hardware and provides a fruitful demonstration of such an *indistinction* between flesh and machine. *Binary Domain* thus explores the blurring of identities that videogame play fundamentally depends on. With its characters so determined to keep the purity and essence of a privileged hegemony (humans) distinct from the corrupting influence of the marginalized (hon-humans) despite the insistence of a world where such distinctions have long been impossible, *Binary Domain* provides a potent lens onto the tensions between dominant (gamer) and marginal videogame technicities.

The first section of this article will trace the lineage of the cultivated 'gamer' identity through a pre-existing hacker mythos to demonstrate how videogames, from the start, became naturalized as masculinist and how this shaped a dominant technicity that persists today. The second



section will contrast this dominant technicity with those cyborg technicities that emerge through marginal and casual game design. The tensions raised between the two technicities will be explored through *Binary Domain*'s characters' discovery of 'hybrid people': fully organic people with a robotic parent. The hybrid people force a conceptual realigning of just what it means to protect the sanctity of 'Human'—simply being fully organic is no longer enough. As those with power in *Binary Domain* constantly shift the definition of 'Human' to ensure its purity and deny access to those it wishes to oppress, so too is the 'gamer' identity able to shift definitions and borders to exclude a range of technicities that challenge the hegemonic dominance of the gamer-hacker. The final section, then, will stress that in outlining these two formative technicities, the hacker and the cyborg, it is important to not suggest that they exist hermetically in some dualistic battle, but as complementary perceptions on how humans engage with technology. As the cyborg's integration emerges in reaction to the hacker's dominance, the hacker's dominance is dependent on the cyborg's integration. Less interesting than which technicity is 'right' is how each renders legible particular perspectives on the videogame form for designers, critics, and players alike, and that is what this article aims to accentuate.

## THE GAMER AS HACKER

While *Binary Domain* sports a more diverse range of characters than many blockbuster games, with the player's six-person squad consisting of four nationalities and two women, the playable character remains the normative videogame trope of the white, heterosexual, American man. *Binary Domain* also plays with this conventionality, however, as the British character Charles Gregory is technically in command of the Rust Crew while the player's Dan Marshall plays the role of both pig-headed American brute and inevitable hero. As Dan is connected to the player, the experience inevitably centers around his experience of saving the world (and the woman). While *Binary Domain* delivers Dan's character with its tongue firmly planted in its cheek, he remains typi-

cal of a broader videogame status quo. The overwhelming representation of male and white characters as playable characters in industrially-produced videogames is well-documented and well-critiqued by a range of critics (Anthropy 2012b; Sarkeesian 2013; Dovey and Kennedy 2006; Walker 2013; Conditt 2015). Through these characters saving the world through physical prowess, a target audience of young, white men are empowered and catered to while other demographics become secondary. Such a dominant form of character that becomes the dominant mode of engaging with videogames does not come from nowhere, but exists within an ongoing trajectory of dominant masculine technicities. Here, it is important to see how the ‘gamer’ as the normative male videogame player in charge of characters like Dan exists and is cultivated by a constructed consumer identity that demands and values a certain, hacker-influenced technicity.

The ‘gamer’ persists as the dominant videogame player identity, often problematically used in both popular and scholarly discourse as a synonym for ‘videogame player’. That the ‘gamer’ is often titled more specifically the ‘core gamer’ points to the conceptual centrality of this identity as the most important identity to videogame culture. However, as researchers such as Shaw (2011) and Kirkpatrick (2012) have shown, only a very particular subset of videogame players consider themselves to be gamers. Further, a 2015 national survey by Australia’s Interactive Games & Entertainment Association (IGEA) found that only 38% of those surveyed consider the term ‘gamer’ to simply mean ‘someone who plays videogames’. Rather, for most people, ‘gamer’ refers to those videogame players that commit much time and money to those most ‘authentic’ videogame experiences: expensive, high fidelity, highly challenging blockbuster experiences—the games that demand a complicated, dexterous virtuosity, and the dozens of hours of free time in order to develop such a skill. Such games that a core gamer culture privileges perpetuate a dominantly masculine culture with narratives and actions focused on men achieving goals and exerting power through physical feats, with entrenched themes of militarism and mastery (Wajcman 1991, 154; Anthropy 2012b, 12). These blockbuster games typically and nor-

matively position the player as ‘in charge’ and possessing a personal and autonomous responsibility, as is most explicit in the language used to address gamers on the back covers of any blockbuster game: “The choices you make will shape your fate and that of the empire around you,” insists the cover of *Dishonored* (Arkane 2012); “You choose from 120 events. You choose the fasted route to the finish line. You shape your path through Paradise [City],” boasts the cover of *Burnout Paradise* (Criterion 2008); “Every action has consequence and could decide whether the crowd will help you... or hinder you!” threatens the cover of *Assassin’s Creed* (Ubisoft 2007). Blockbuster videogames have long been sold to a cultivated target audience through promises of freedom and autonomy: the choice is yours! Through such presumptions to autonomy and freedom and control, the virtuosic quickly becomes the most authentic performance: how well the gamer did, how good their decisions were, how accomplished they are at playing—and at defeating—the game. To play the game is to beat the game (or die trying).

The ‘gamer’ continues an existing trajectory of dominant masculine identities inscribed onto technology use through the twentieth century. Here, it is revealing to link the gamer identity as it emerges in the 1980s and 1990s to the romantic notion of the hacker mythos through the 1960s and 1970s. Truly, it is impossible not to make such a link. While others have made constructive links between early videogame design and new media forms of the late 19th and early 20th century such as the penny arcades, nickelodeons, and panoramas (Huhtamo 2005; Golding 2014), videogames as a form emerge explicitly from American university hacker culture. *Spacewar!* (Russell et al 1962), arguably the first videogame, was produced by students hacking and appropriating a PDP-1 at MIT. Since then, the symbiosis of videogame and hacker cultures is well documented, from the origins of early commercial videogames being produced by engineers and software students (Donovan 2010), to game magazines that rather than supplying discs, present pages of code for the young gamer/hacker to type into their own computer at home (Kirkpatrick 2012), to more contemporary modding cultures (Dyer-Witthford and de Peuter 2009, p.185). The hacker in their

(usually his) bedroom, creating the next million dollar software company or game studio is a frontier narrative for the twentieth century.

However, this mythos of nerds building up technology in campus dorm rooms and garages, picking themselves up by their own bootstraps, also re-inscribes a dominant masculinity, as feminist scholars of technology have traced. In particular the work of Sherry Turkle (2005 [1984]) and Judy Wajcman (1991) is significant. Turkle's ethnographic research on the hacker culture of MIT's campus through the 1980s reveals a culture that is masculinist and hostile to women (2005, p.194), that focuses on "playing with" computers rather than using them (2005, p.193-194), that appreciates formal complexity for its own sake (2005, p.197), and which views complex systems as something that must be defeated in contest (2005, p.197). Turkle's hackers are playful in a strictly ludic, goal-orientated sense: the computer offers a problem to be solved. Tellingly, when Turkle expresses to one of her interviewees that she wants to understand the 'feel' of hacking, the hacker suggests she plays the videogame (contemporary at the time of the interview) *Adventure*. *Adventure*, Turkle found, captured the hacker experience of "living with his code" much better than a simple computer programming course: "It is the introductory computer course that fails to give its students a sense of what programming is to its virtuosi. When systems get complex they become worlds that you can live in" (p.2005, 206). While videogames do not require the same programming literacy or virtuosity as does hacking complex computer systems, they commonly value similar experiences of understanding and mastering complex systems and, ultimately, bringing them under control.

Wajcman builds on and critiques Turkle's work to contextualize the hacker identity within broader cultural factors such as race, class, gender, and age in a significant precursor to this paper's concern with technicity. Wajcman notes that while the individuals that make up hacker collectives commonly self-identify as losers or loners, these "mainly white middle-class men" draw "on the culturally dominant form of masculinity for their notions of risk, danger and virility in their work" (1991, p.144).

Wajcman highlights the “complex relationship between knowledge, power and technology” (1991, p.144) that is pointed to through how the men in these hacker groups both lack and possess power through their technical expertise: many hackers are marginalized from cliché understandings of masculinity built on physical prowess, but also possess particular cultural and societal privileges through their technical prowess. Significantly, Wajcman is critical of Turkle’s tendency towards gender essentialism (1991, 157), instead situating masculine approaches to technology through the historically unequal access to computers between genders. While computing originates as a woman’s domain when ‘computers’ were human (Hayles 2005, 1), they were masculinized as they became machines linked with military bases and the scientific and mathematical faculties of schools and universities. The pre-existing gender disparity in educational departments is thus reinscribed through access to computers (Wajcman 1991, 152). Of course, Wajcman was writing several decades ago, but the history remains relevant: computer use (and by extension, videogame play) was long naturalized as masculine, was the realm of the engineer and the mathematician, and inherited and perpetuated Western and neoliberal masculine values of control, mastery, and autonomy, as most clearly seen through the mythos and aesthetics of the hacker. Significantly, while Turkle is celebratory of her ability to comprehend the pleasures of hacking through early videogames, Wajcman’s explicit link between videogames, hacker culture, and dominant masculinities is more critical:

“Games are the primary attraction of computers for children. Given that it is men (often computer hackers) who design video games and software, it is hardly surprising that their designs typically appeal to male fantasies... Many of the most popular games today are simply programmed versions of traditionally male non-computer games, involving shooting, blowing up, speeding, or zapping in some way or another. They often have militaristic titles such as ‘Destroy All Subs’ and ‘Space Wars’, highlighting their themes of adventure and violence. No wonder then that these games often frustrate or bore the non-macho players exposed to them.” (Wajcman 1991, p.154)

While videogames today encompass a far broader diversity of genres

and forms of attention, that Wajcman's observations of the state of the videogame form could still be said today about the most dominant videogame works produced by the industry (*Binary Domain* included) points directly to the lingering legacy of the 20th Century hacker and its masculinist normativity on gamer culture and production, on what is valued and by who.

Such ubiquitous masculinities do not only determine which videogames are more likely to be created, but which videogames are valued as exemplary of the form. Directly descendant from the hacker cultures of the previous decades, those games made for gamers through the close of the 20th Century and into the 21st that are most valued by videogame critics are those that allow the player to express a sense of freedom, agency, autonomy, power, and control: players take on powerful roles like commander, mayor, god, soldier, gangster, or superhero to both save the world and, more often than not, save the girl. Critical discourses surrounding videogames have been quick to embrace these values as seemingly inherent to the videogame form rather than socially constructed through its most dominant works. Kirkpatrick traces the etymology of 'gameplay' as an essence that is meant to distinguish videogames as a unique cultural practice but which instead comes to signify "the tastes and preferences of the authentic gamer" (Kirkpatrick 2012). Scholarly discourses on videogames, too, unproblematically inherit many of the normative values of a hacker mythos when evaluating the videogame form. The focus on player agency that potentially prevents videogames being evaluated as texts (Aarseth 2004, p.47), the celebratory tone often invoked when discussing corporate technological advances (Keogh 2014), user-generated content such as mods as somehow more liberating than conventional videogame play (Banks and Humphreys 2008) all depend on and play into an understanding and evaluation of videogames specifically and technology broadly that runs parallel with a hacker technicity. This is often explicitly gendered, too, such as Aarseth's (2004) comment that what Lara Croft's body in *Tomb Raider* looks like matters far less than what he can *do* with it, privileging the agency and actions of the player in a computational system over the gendered representational

strategies of the videogame. Just as the hacker is concerned with mastering complicated systems and ultimately beating the form of the computer, so too is the gamer concerned with mastering complicated systems of mechanics and ultimately beating the form of the videogame. Writing in 2002 to defend the oft-dismissed videogame cut-scene, Klevjer explicitly claims ludology to be “partly rooted in the dark arcade of the late 70s and early 80s, partly rooted in hacker culture” (p.193). That the study of videogames in many institutions still finds an uneasy (though at time constructive) home between the humanities and computer engineering departments points towards the everydayness of these tensions.

As a consequence of its historical construction as masculine and its alignment with the hacker technicity that favors a particular technological competency, mechanistic virtuosity, and systems literacy, discourses around videogames (both scholarly and popular) have produced what Dovey and Kennedy note is “an ‘ideal’ player subject that is naturalized as ‘white’, ‘male’ and ‘heterosexual’” (2006, 63). Similarly, Shaw’s survey exploring just who self-identifies as a ‘gamer’ confirms that “male interviewees were much more likely to identify as gamers than female, transgender or genderqueer interviewees were” (2011, 34) and that such self-identification has little to do with whether or not the interviewees played videogames, or for how long. In other words, many non-male videogame players, even if they play videogames frequently, do not consider themselves to be ‘real’ gamers or the games that they play to be ‘real’ games. Dominant understandings of videogame play, taking masculinist ideologies as inherent values, obscure the heterogeneous spectrum of meaningful and significant experiences players have with videogames to instead allow a highly gendered, formalist, and conservative conceptualization of videogame play to dominate. The hacker technicity of videogame play thus points to the dominant, normative, hegemonic, and masculine; it points to that audience with the most power, and speaks to their values while inevitably marginalizing and obscuring a plethora of other identities and values that surround videogame play but which are delegitimized by a dominant discourse.

## THE PLAYER AS CYBORG

Whereas Dan is an archetypal white, heterosexual, macho American male, his fellow Rust Crew squadmate Faye Lee is a stereotypical, quiet, and slim heterosexual woman from rural China—"Farm Girl", Dan playfully (and mockingly) calls her through the opening chapters of the game. Faye, at first, treats Dan with contempt, but in a typical masculine narrative fashion, Dan's (and thus the player's) strength and physical ability wins Faye over and soon they fall for each other. This is complicated by a reveal towards the end of the game: not that Faye is a robot (a reveal that both Dan and the player come to expect) but, rather, that she is what *Binary Domain* calls a 'hybrid person'. Female androids produced by the Amada Corporation who themselves did not realize they were robots fell pregnant to human males and had human children, of which Faye is one. Faye, despite being completely organic in composition, is a literalisation of Haraway's "illegitimate offspring" of flesh and machine (1991, p.151), and Faye's very existence is a breach of the New Geneva Convention. The sheer lack of empathy in the voices of Charles Gregory and the other members of the Rust Crew towards their squadmate when her ancestry is revealed is shocking; despite the fact she meets a strictly biological definition of what it means to be human, they no longer conceive of her *as* human and thus she must be terminated. The critique that *Binary Domain* is able to make with the late reveal of the existence of hybrid people is a level above that made by works with an android who becomes human (or vice versa) over time. Rather than a transition from one stable category (non-human) to another (human), the reaction of the characters to the hybrid people reveals how biological understandings of what it means to be a 'human being' have little influence of what it means to be socially constructed and accepted as 'Human'—. The hybrid people suggest, further, that despite being constituted solely by organic material, you may also be, simultaneously, a product of flesh and machine—an everyday cyborg.

The exclusionary practices of the category of 'Human' have been well documented by scholars. Foucault shows how the concept of 'Man' is



one only a few centuries old, tracing it back to the Western Enlightenment (2005 [1966]). Latour's work shows how 'Human' is defined through a split between nonhuman Nature and human Culture in such a way as to ensure Man's dominion of both (1991). Most significantly for this article, Hayles demonstrates how the liberal, Enlightenment concept of 'Man' as autonomous and possessing agency and free will over His own life is a conception that "may have applied, at best, to the fraction of humanity who had the wealth, power, and leisure to conceptualize themselves as autonomous beings exercising their will through individual agency and choice" (1999, p.286). The dualistic tendencies of modernist approaches to conceiving what it means to be human is responsible for a range of pervasive ontological dichotomies such as man/woman, man/world, nature/culture, man/ god, form/content, mind/body. These dualisms find their way into conceptions of technology and computer use through the hacker mythos, itself a continuation of this liberal, Enlightenment Man mastering and exerting control over His (technological) world. It is this same conception of human, defined by and depended on by those possessing and consolidating power that ensures Faye is excluded from the human race through her ancestry. 'Human' is thus exposed as a hegemonic identity defined by what it excludes, and shifting its definition to ensure those excluded remain excluded.

Feminist technology and cyberculture studies have traced these links in far more detail than this paper has the scope to reiterate (Haraway 1991; Hayles 1999; Casper 1994; Wajcman 1991), but the point remains: if the hacker is a hegemonic and dominant technicity in both technology culture broadly and videogames specifically, it is so as a continuation of those hegemonic and dominant identities that have been naturalized as male and white for centuries. The cyborg emerges as a response to these identities, embracing the hybridity, impurity, and ultimate partiality that destabilize their hegemonic dominance. For Haraway in particular, the cyborg is an explicitly feminist metaphor that contests not just dominant knowledges, but dominant *ways of knowing*:

"Perhaps, ironically, we can learn from our fusions with animals and

machines how not to be Man, the embodiment of Western logos. From the point of view of pleasure in these potent and taboo fusions, made inevitable by the social relations of science and technology, there might indeed be a feminist science.” (1991, p.173)

Where the hacker strives for autonomy and dominance over the machine, the cyborg embraces the fact it is always already in part shaped and mediated by the machines it integrates with.

As Dovey and Kennedy note in their own exploration of the gendering of videogame culture through the hacker mythos, “If a particular group is dominant then we can be sure that there are other stories, identities and creative processes that get written out of the discourse of dominance” (2006, p.76). Much of early videogame studies, for instance, stresses as essential to the form the ability of the player to freely ‘act’, to exert agency over the game. Indeed, the early debates between narrative and play circled around such a notion that a more active audience would be more free of the author’s control than the film viewer or book reader. Such an understanding, however, takes as inherent those values in videogame marketing and design that are simply a dominant norm and have long held up a subset of videogames that focus on mastery, player agency, control, and skill as exemplary of a broader form. In videogame journalism, too, a persistent privileging of more ‘open’ games over those videogames seen as too linear or tightly authored echoes this conceptual border policing. For instance, consider this review of the game *Dear Esther* (The Chinese Room 2012):

“Dear Esther is not your traditional concept of a game [...] There’s little actual gameplay to speak of: you move about with the arrow keys in first-person, and that’s pretty much it. There are no enemies, no puzzles, nor any items or objects to interact with. You cannot jump, or sprint, and the game will automatically crouch for you if need be. You have a flashlight, but the game will turn it on and off for you. These automatic actions drive home the feeling that you’re not even really in control of your character—you’re more of an observer inhabiting their headspace. There is one walking pace, and it’s deliberately ponderous so that you might take time to appreciate the environment around you because that’s really all there is to do.” (Hindes 2012, p.48)

Instead of comprehending what particular engagements *Dear Esther* offers, the reviewer can only list those formal elements not present in the game. The review suggests that *Dear Esther* is a game of poor quality because it lacks the typical challenges of dexterity and intellect to be mastered—you are not even “really in control” of your character. When the reviewer says there is “little actual gameplay,” they are taking one narrow (yet dominant) conceptualization of videogame play and allowing it to stand in for the myriad engagements possible with videogames. Similarly, a demonstrative user review of the game *Gone Home* (Fullbright 2013) on review amalgamation site *Metacritic* complains that “The only semblance of gameplay *Gone Home* has to offer is 90 minutes of pitiful, painfully easy exploration... To call this a video game is insulting!” Here, *Gone Home* is not simply a game of poor value due to its lack of normative qualities, but a danger to the very concept of ‘Videogame’.

*Dear Esther* and *Gone Home* are exemplary of nascent modes of videogame design that do not offer the pleasure of mastery and control that the hacker technicity privileges. Rather, they offer little more than a path to walk down or an environment to explore. There is a distinct lack of anything to ‘do’ in such games, a lack of explicit choices to be made beyond the navigational. Instead, the pleasures of *Dear Esther*, *Gone Home*, and many other videogames is textual and phenomenological, and requires a more integrated and cooperative relationship between the human and the computer—they require cyborgs willing to integrate with the machine, not hackers determined to master it.

Importantly, the videogames least capable of being evaluated by a hegemonic, dominant hacker technicity are those videogames that most explicitly react against the masculinist dominance of the commercial videogame industry. The last decade has seen the rise in both casual mobile games with popular appeal to demographics beyond a core ‘gamer’ consumer base (Juul 2010; Hjorth and Richardson 2009) as well as vibrant avant-garde scenes of marginal artists, and each has been forced to confront a dominant understanding of videogames that struggles to appreciate such ‘non-core’ experiences. Casual games, such as

*Candy Crush Saga* (King 2012) or *Kim Kardashian: Hollywood* (Glu 2014) have their overwhelming commercial success trivialized by critiques of how easy they are to play, and the seemingly superficiality of their fiction—as though a woman networking in Hollywood is more superficial than a hulking space marine saving the earth. At the same time, an avant-garde of ‘zinester’ (Anthropy 2012b) developers emerges—many of whom are women, queer, persons of color, and/or transgender—and the critically acclaimed videogames they have created challenge dominant understandings of the videogame form. As Allen (2013) notes in a comparative piece on how movement is conceived by the open-world and critically acclaimed blockbuster *Skyrim* (Bethesda 2011) and Anna Anthropy’s autobiographical *Dys4ia* (Anthropy 2012a), the freedom of movement taken for granted by players in many blockbuster games closely parallels the freedom of social movement possessed by the predominately white, straight, and male creators of those games. Games by queer developers on the other hand, commonly communicate through a *lack* of freedom of movement, such as the various constraints placed on the player in games such as *Dys4ia*, *Lim* (Kopas 2012), or *Mainichi* (Brice 2012). These restrictions, however, along with the lack of technological spectacle consequential to such games being made beyond the advanced resources available to a large studio, commonly mean that such games find themselves dismissed as less than legitimate games, possessing a lack of things for the player to ‘do’. This is perhaps most relevant of all to the renaissance of interactive fiction games seen through the development software Twine (Hudson 2015).

Just as those with the most power in a hegemonic society consolidate their power through constantly renegotiating what it means to be socially legitimized as ‘human’, the most powerful stakeholders of videogame culture—those that have long taken the values of the hacker mythos as ‘natural’ to the videogame form rather than dominant—consolidate their power through a negation of those games that directly challenge such narrow definitions. This is perhaps most visible every time a games journalism outlet reports on an industrial survey which shows that half or more videogame players are women. Without fail, a reader will attempt

to negate such a claim by noting that the games most women play are not ‘real’ games. Those videogame that focus less on mastery and control, and more on participation and integration are both more accessible and attractive to a broader range of people than the young white men targeted by blockbuster games; simultaneously, are marginalized as less legitimate by the dominant discourses around videogames. Just as *Binary Domain*’s hybrid people are dismissed by those with power moving the goalposts of what it means to be human, the vast majority of hybrid players— cyborg players—are dismissed by a constant consolidation of just what is considered a legitimate videogame in the first place. Acknowledging the rhetorical and evaluative strategies used to make such a move is crucial to allowing a critical discussion of the videogame form to move beyond and react against its most normative instantiations.

## DOMINATION THROUGH INTEGRATION THROUGH DOMINATION

It’s useful now to return to the scene late in *Binary Domain*, mentioned in the introduction of this paper, where the synthesized physical prowess and ability to kill lots of robots by Dan-and-the-player is treated as an opportunity for Dan’s squadmates to question his humanity. Dan, as the archetypal macho white male character that personifies the dominant masculinity of the hacker technicity, is here suspected as being *too* powerful to be a human. Here, the anxiety is not of the cyborg as less than human but of the cyborg as more than human, as too perfect, as possessing *more* power. Both the instances of Faye as an organic cyborg and Dan as a too-perfect human crucially complicate what this paper has up to now risked presenting as too straightforward a dichotomy. The hacker and the cyborg, as ontological metaphors for understanding the formative identities that mediate videogame culture, do not exist as distinct from one another but as *entangled with* and *constantly reacting against* each other. The domination and mastery of the hacker requires machine-like ability, while the cyborg exists, has always existed, in a direct relationship to the hacker from its inception.

Dovey and Kennedy, in their own discussion of the hacker mythos and dominant videogame technicities, point towards this intricacy, where the “lone individual genius” hacker is often described as having “machine-like minds and inhuman propensities” (2006, p.69). In particular, Dovey and Kennedy look at Kushner’s boasting in *Masters of Doom* (2003) that game developer John Romero could play *Pac-man* with his eyes closed. Whereas Kushner presents this anecdote as an example of Romero’s mastery of the computer, Dovey and Kennedy offer an alternative reading, where the machine has fully trained Romero to respond in the optimal manner. Similarly, speedrunning cultures, that work to use exploits and hacks to finish a game as quickly as possible, are almost computer-like in their split-second inputting of exact button presses. The best hackers, it seems, are cyborgs. While *Binary Domain* comments explicitly, if flippantly, on the complex overlap between hackers and cyborgs, it is seen less explicitly in a range of blockbuster videogames that use the metaphor of cyborgism to explain the playable character’s improbable and exceptional physical strength and dominance in the world. Master Chief, the playable character of *Halo* (Bungie 2001), is explained to be a biologically-engineered supersoldier, augmented further with alien-technology armor and recharging shields. Other examples are numerous: *Assassin’s Creed* uses a framing device of a character connected to a machine enacting another character to explain their powerful abilities; the playable character of *Bioshock* (2K Boston 2007) augments their body with powerful potions; *Metal Gear Solid’s* (Konami 1998) Solid Snake is an engineered supersoldier, augmented by nanomachines. In *Deus Ex: Human Revolution* (Eidos 2011), a game explicitly concerned with technological augmentation, the hardest difficulty setting the player can choose is explained as being for players who are “one with the machine.” Such cyborgism is not limited to science-fiction worlds, either. The playable characters of contemporary military shooters such as *Call of Duty: Modern Warfare* (Infinity Ward 2007) are augmented with unmanned drones, night-vision, and laser-sights; the undead ranger of *Middle-Earth: Shadow of Mordor* (Monolith 2014) is augmented by an elven wraith. Across all these stories, actual and virtual, is the implicit

or explicit suggestion that the human's domination is always dependent on the human's integration with nonhuman technologies.

Indeed, such a point is where the cyborg first enters critical discourse through Haraway as "an ironic dream of a common language for women in the integrated circuit" (1991, p.149). The important point is not that posthuman cyborgs are a hybrid of machine and organism *unlike* human hackers, but that the dualisms that allow the human to be seen as distinct from the machine—Nature distinct from Culture, Man distinct from Woman, Occidental distinct from Oriental, gamer distinct from non-gamer—are themselves constructed illusions and that no such distinction truly exists. Instead, focusing on the inherent cyborgism of videogame play, where human players are seen to be integrated with, rather than strictly dominating the machine, provides fruitful ground to explore broader capabilities of the videogame form, along with more nuanced ways of comprehending them. It puts back into play the corporeality of videogame engagement that is commonly ignored, such as when Galloway claims that "no gameplay is actually happening" at the moment the player stands on a virtual street corner to watch the sunset (2006, p.10). It allows an appreciation for those games and critical manifestos from recent years that work to explicitly de-center the concerns of the player in videogame design, understanding the player more as one element in a much larger circuit rather than as looming over and comprehending a system. It allows for understandings such as Golding's (2013) that see the player as navigating from within, rather than configuring from above, not unlike Haraway's feminist objectivity that insists we always see from somewhere (1988, p.882).

## CONCLUSION

In *Binary Domain's* most harrowing scene, a man is injured in an explosion, and the injury to his face reveals his metallic skeleton. The man, however, remains unaware that he is a robot, and is confused as to why people are moving away from him in fear. When he sees himself in the reflection of a man's sunglasses, he refuses the truth he sees. "I'm

human!” he screams at the people around him, while the visual shot of his synthetic eyeball in a metal skull tells us different. The man’s insistence that he is human, in the face of undeniable evidence that his very being is determined by an integration of flesh and machine, while Faye as a fully organic hybrid person is told that she is not human, points towards how ‘human’ is a socially constructed concept with fluid but constantly policed borders. A microcosm of this broader societal issue is videogames and their gamers, themselves socially constructed concepts with fluid borders that are constantly moving to consolidate the power of the dominant. This paper, using *Binary Domain*’s particular commentary on cyborgism and videogame play within the dominant hacker technicity of the blockbuster space, points towards the foundational tensions between these two formative technicities. It makes no argument for either as ‘wrong’ or less accurate, but instead insists on the importance of comprehending the influence of each on how different groups of developers, critics, and players evaluate videogame attributes. Understanding videogame technicities as influenced by the hacker in the dominant space, with its masculinist norms of mastery, dominance, and technological and physical prowess; and the cyborg on the other hand with its fundamental partiality and integration with nonhumans better allows us to comprehend a range of contradicting values and arguments made of videogames both scholarly and in popular discourses. It reacts against prescriptive notions of what a videogame ideally should be to instead allow a descriptive appreciation of the various different things that videogames are.

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# Sound Similarity as a Tool for Understanding Player Experience

## Applying Similarity Matrix to Gameplay Performance Segmentation

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### ABSTRACT

Analytical accounts chronicling engagement with digital games can always benefit from empirical data outlining the patterns of behavior produced by different players as they engage with the same game, or similar sequence within a game. This paper presents an extension to a novel method, termed *feedback-based gameplay metrics*, which exploits the audio and visual output of an activated game to produce accounts of player performance. This paper offers an account of an affiliated method, based on similarity matrices, which is derived from the same measurement process and that has yet been applied to the interests of game studies (over design oriented research) to determine the similarity or diversity within encounters with particular games. This paper introduces

the method and illustrates its potential applications in the analysis of performance.

## Keywords

Similarity Matrix, Sound Processing, Sound similarity, Player Experience, Gameplay Performance Segmentation.

## INTRODUCTION

Trying to understand the specific experience that represents playing a videogame has been a core area of research in game studies for more than a decade now. This is notably challenging because a videogame is “both an object and process that must be played, [and] playing is integral, not coincidental” (Aarseth, 2001). Thus, to understand a player’s experience, it is necessary to be able to assess the way a player goes about fulfilling the need of the system to be activated in play. Numerous approaches have been designed that not only account for the manner in which players actually engage with a game system, but also for the rationale behind their actions and interactions. A large range of works variously address how players engage in games. These works include more theoretically-oriented approaches, such as Gordon Calleja’s (2011) work on player involvement, which speculates as to what constitutes the main factors explaining why players continue to engage with game systems. The literature also includes more methodologically-oriented approaches, such as studies that accurately trace and log the different interactions between the player and a game system (Drachen, Thurau, Togelius, Yannakakis, & Bauckhage, 2013; Kim et al., 2008). Some approaches blend theory and method, such as the analysis of how flow theory (Csikszentmihaly, 1990) might be translated to game systems (Nacke & Lindley, 2008).

When hours of play experience need to be understood, summarized and/or visualized, several approaches have been suggested to automatically process and analyze the play sessions. This is for instance the case of

*gameplay metrics* (Drachen, Seif El-Nasr, & Canossa, 2013), which are time-stamped quantitative data about player interaction automatically logged by the game system while activated; *player modelling* (Yan-nakakis, Spronck, Loiacono, & André, 2013) which focusses on understanding players in order to create a computer and mathematical model that can be used within the game system to improve the experience of play; or *biometric storyboard* (Mirza-Babaei, Nacke, Gregory, Collins, & Fitzpatrick, 2013), which displays biometric signals along with other core measures in order to propose an exhaustive representation of a play session.

The notion of experience can be expended to other measures and perspectives. In this paper, we suggest the use of *similarity matrix* for automatically summarizing and visualizing a play performance through the detection of segment of plays that carry strong similarities. More precisely, this paper seeks to demonstrate how the production of a similarity matrix, based on a sound analysis of audio outputs from game play can be used in order to perform a segmentation of a gameplay performance to express the manner players engage with selected games. We use the term performance (see Laurel, (1993), in order to insist on the fact that we focus on *gameplay* as relative to specific activations of the play – meaning that various player performances with the specific game are segmented – rather than the *game* as an absolute entity. This particular method of *gameplay performance segmentation* seeks to emphasize the extent to which individual player experiences with linear structures conform or diverge. It is important to specify that *gameplay performance segmentation* does not override the *gameplay segmentation* notion as previously defined by Zagal et al. (2008), which represents “the manner in which a game is broken down into smaller elements of gameplay” (Zagal et al., 2008, p. 178). Gameplay performance segmentation must be seen as a continuation of gameplay performance: after identifying gameplay elements using gameplay segmentation, it then becomes possible to focus on the evolution of each determined segment using a gameplay performance segmentation approach.



A similarity matrix represents a meaningful approach to segmentation for both the assessment and representation of the similarities between different documents or similarities within the same document (termed auto-similarity matrix). A similarity matrix can be employed for a large variety of modalities, such as textual documents (Choi, 2000), visual documents (Cooper & Foote, 2001) and musical documents (Hanna, Robine, & Ferraro, 2008). However, while similarity matrices have been successfully applied within computer science, they have yet to be employed within game studies to aid understanding and assessment of player experience. Having made this point, an approach that seeks to assess player experience through the automatic analysis of audio-visual streams has recently emerged in the form of *feedback-based gameplay metrics* (Author et al., 2013; Author et al., 2014; Author, 2015). This method exploits the audio and video feedback streams produced by a game once it has been activated and recorded, to process it as data in order to describe the manner in which a player engages with a specific game system. As similarity matrices can be produced based on sound or video data, this paper outlines an exploration into the potential of this form of analysis as a component of feedback-based gameplay metrics. The main contribution of feedback-based gameplay metrics is that they can be captured from any game, whether the source code is available or not, thus offering access to a wider range of games. Moreover, feedback-based gameplay metrics represents a post-processing method, allowing an analyst to explore the data however they wish and as many times as they wish. Currently, however, feedback-based gameplay metrics requires a pre-analysis stage in order to elicit the significant elements of the game to be processed by the method. What similarity matrices offer this mode of game metrics gathering is a means of exploiting the sound stream produced by the game play performance without the need for any pre-analysis.

In this paper, three different usages of similarity matrix are illustrated, using three different games in order to also demonstrate the broad nature of this approach. The first one is dedicated to a comparison of two different gameplay performances produced by separate individuals playing

the same game. The second example illustrates the detection of repetitions from within the same performance (that is, which sections of the game are replayed and experienced more than once by the same player). The last example illustrates how it is possible to compare a performance by exploiting the game's soundtrack to study player progression. Before illustrating the creation and analysis of similarity matrices applied to understanding gameplay, it is important to outline what a similarity matrix entails.

## Similarity Matrix

A similarity matrix is a mathematical entity consisting of a rectangular array in which each entry describes the degree of similarity between the element represented by the current row, and the element represented by the current column. In the case of media documents, similarities are computed for each sub-units of a document, with every sub-unit of another document. For a textual document for example, a sub-unit can be a word or sentence; for video document, a sub-unit can be a frame; and for an audio document, a sub-unit can be a sound sample. In a similarity matrix, the columns represent the ordered sequence of consecutive sub-units from one document, and the rows represent the ordered sequence of consecutive sub-units from a second document (or the same one in the case of auto-similarity matrix). Each entry of the matrix at the intersection of a row and a column contains the similarity score between the two sub-units represented by the matching row and column.

Each similarity estimation is generally a score between 0 (no similarity) and 1 (identical). Once the matrix has been completely filled, all sub-units of a document have been compared with all the sub-units of the second one; and a score has been given for each comparison. That means that a similarity matrix represents an exhaustive comparison process between two documents (or inside the same one in the case of auto-similarity). It then becomes possible to look for the highest scores in the matrix in order to extract similar sections of documents. A similarity matrix may therefore be used to determine the degree of linearity and

freedom designed into a game, the agency of the player to determine how they progress and whether this yields a quite different experience from within the range of experiences available by the game, the nature or style of play employed by players (e.g. explorative or instrumental and goal driven), or the degree of repetition contained within a game experience.

One of the strengths of similarity matrices is their ability to be easily displayed as an image, visualizing the data so that similar sections of documents can be quickly and easily identified. Indeed, a low similarity score can be represented by a white dot, and a high similarity score can be represented by a black dot. Then, similar sub-units of documents can be immediately spotted. Moreover, because the rows and columns represent ordered consecutive sub-units of documents (that is, words in the order in which they appear in a textual document; frames from the beginning to the end of a video document; or samples from the beginning to the end of an audio document), it is also easy to detect not just similarities between sub-units, but similarities between consecutive sub-units (such as a full sentence or paragraph, or a long sequence inside an audio-visual document). For that, all that is required is to identify black diagonals inside the similarity matrix image representation. Indeed, a black diagonal means that a sequence of consecutive sub-units is fully identical with another sequence. In the following sections, we will focus on the diagonals to interpret the different similarity matrices that have been produced using gameplay audio.

Figure 1 illustrates what a similarity matrix is and what a similarity matrix image looks like. In this figure, Document A has been cut into 20 sub-units and Document B into 15 sub-units. The 2nd sub-unit of Document B is similar to the 8th of Document A for instance, and the 17th of Document A is similar to the 6th of Document B. More than that, it is possible to highlight similar sequences by looking for diagonals. For example, sub-units 3 to 4 in Document A are similar to sub-units 11 to 14 in Document B. If the two documents of Figure 1 represent sounds for instance, with each sub-unit being one second of sound, it would be possible to say that the sequence from 8 seconds to 10 seconds in Docu-

ment A sounds the same as the sequence from 2 seconds to 4 seconds in Document B (upper diagonal); the sequence from 17 seconds to 18 seconds in Document A sounds the same as the sequence from 6 seconds to 7 seconds in Document B (middle diagonal); and that the sequence from 3 seconds to 6 seconds in Document A sounds the same as the sequence from 11 seconds to 14 seconds in Document B (lower diagonal).

An example of similarity matrix, as currently used for media structural analysis, can be seen in Figure 2, when applied to the understanding of musical structure (Hanna et al., 2008). By comparing a musical creation (*Minuet* part of the *Water Music Suite No1 in F* by *Handel*) with itself (self-similarity matrix, meaning that the rows and the columns represent the same document), it is possible to quickly characterize the structure of the musical piece, in terms of its major themes. Diagonals indicate that parts of the musical piece on the vertical axis are detected as similar to other parts of the same piece on the horizontal axis, thus highlighting on the Figure 2 example the general ABA structure of a minuet.

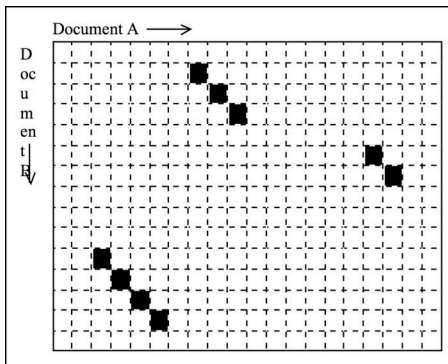


Figure 1: Schematized version of a similarity matrix, illustrating the similarities between two documents. Both documents A and B are segmented in sub-units, and each sub-unit of A (columns) is compared with all the sub-units of B (rows). A black dot represents a similarity, while a white dot represents dissimilarity. By identifying diagonals, it is then possible to characterize contiguous units of A similar to contiguous units of B; thus similarity between full sequences.

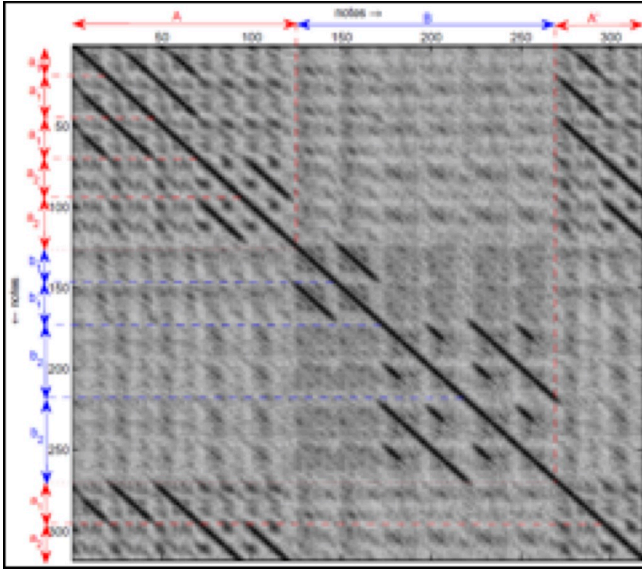


Figure 2 (Hanna et al., 2008): Example of a similarity matrix applied for musical structure analysis. By comparing a musical creation (Minuet part of the Water Music Suite No1 in F by Handel) with itself (self-similarity matrix), it is possible to quickly characterize the structure of the musical piece, in terms of its major themes. Here, the diagonals suggest an ABA structure, representative of the usual minuet structure.

In this paper, and in the following sections, we produced a similarity matrix by using the audio streams generated by games from players' interaction with the game system. To achieve that, we recorded the gameplay footage using a screen-capture software system *FRAPS* (Beepa, 2013), then we discarded the video stream in order to obtain an audio file. The audio stream was then cut in small sub-units of several milliseconds, and each unit was translated into a chroma representation (Serra, Gomez, Herrera, & Serra, 2008). A chroma, or Harmonic Pitch Class Profile (HPCP) is the frequency distribution of a portion of music in terms of the 12 usual semitones of the equal tempered scale. By using the chroma representation instead of the raw sound stream, we ensure that small noises will not have a strong influence on the similarity result. Then, each computed chroma of one sound is compared with the computed chromas from a second stream (in terms of distance, the

shorter the distance, the greater the similarity), generating the similarity matrix. Finally, in order to generate the similarity matrix image, a threshold value is selected, under which a dot would be white (dissimilar), and over which a dot would be black (similar). The three examples of similarity matrices presented below are all based on this approach using sound streams and chroma representations.

## GAMEPLAY PERFORMANCES: SIMILARITY

The first similarity matrix introduced in this paper has been produced using two performances derived from the game *Max Payne 3* (Rockstar Studios, 2012), by two different players. In this third-person shooter game, the player controls Max, a security guard in charge of the security of a wealthy and famous family. The narrative has a strong role during the gameplay, through two main mechanisms: Max Payne thinking aloud to inform the player about what is happening and what Max recalls in conjunction with the current action; and cut-scene explaining further to the player the context in which he/she interacts. These cut-scenes, sometimes included suddenly between player's actions (i.e., not uniquely between two levels), can be long, and are recognizable through their specific sonic atmosphere. Moreover, the cut-scenes' order of appearance is linear, as they always appear in the same order regardless of the player activations. Then, identifying the cut-scene is a way of identifying a player's progression.

Figure 3 shows a similarity matrix produced using two soundtracks (truncated after 80 minutes for readability purposes) recorded during game sessions with two different participants. Each dotted square represents 5 minutes of play. As explained in the previous section, the patterns to look for are the diagonals, as they represent contiguous sequences of similarity. Figure 4 is an annotated version of Figure 3, highlighting patterns that are interesting and worthy of discussion.

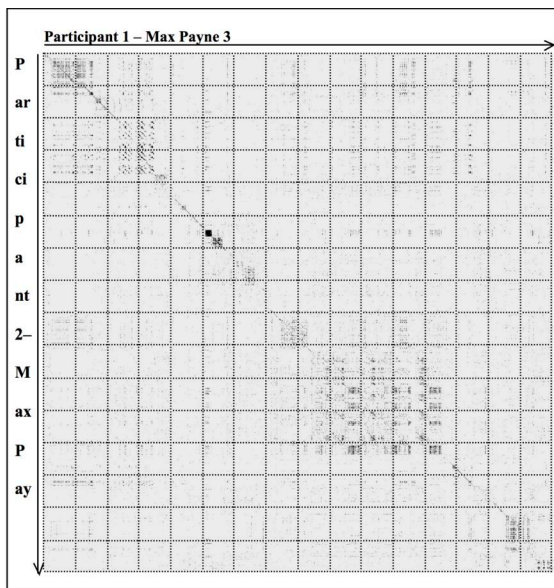


Figure 3: Similarity matrix using the audio of two gameplay performances with the game Max Payne 3. See Figure 4 for a more detailed description of this matrix.

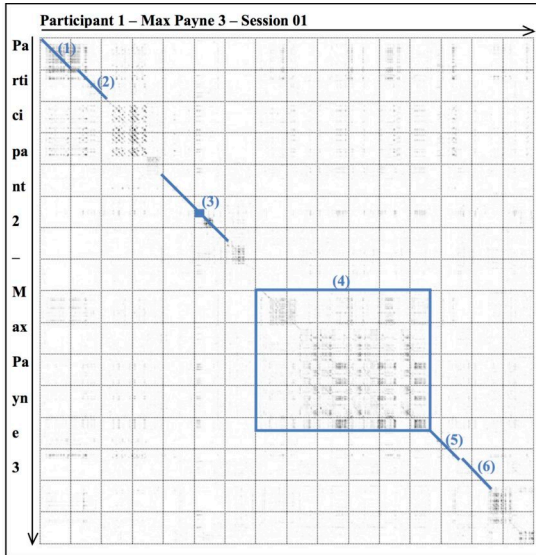


Figure 4: Figure 3 with annotations highlighting the patterns of interest in the similarity matrix

In Figure 4, (1) represents the introduction cut-scene, lasting for around 5 minutes and unskippable, that crossfades directly into the main menu (the cut-scene continues in background, looping on Max drinking and smoking, sitting at a table). (2) represents the first game chapter introduction cut-scene, which is played when the player exits the main menu. It is interesting to focus on the break in the line between (1) and (2), because it indicates different player engagements with the game. Indeed, this break indicates that Participant 1 spent around one minute more in the main menu, while Participant 2 obviously went directly into the game action. For Participant 1, it was important to customize the game to his/her preferences before starting the actual game (probably in order to match preferred control), while Participant 2 did not want to lose any time configuring the gameplay to come. (3) represents the cut-scene between chapter 1 and chapter 2, that Participant 1 achieved after twenty minutes of play, and Participant 2 after twenty-two minutes. This very close duration indicates that both participants had the same level of skill on this level, or that the level is designed to not offer significant latitude



to players. The first level of *Max Payne 3* is actually a tutorial, therefore it is reasonable to expect players to take a similar amount of time to complete this level. The developer is likely to have had a desire to keep this level interesting, diverse and not too challenging. The square on the (3) line represents a moment in the cut-scene when the music looped, making all the units in the area similar. (4) highlights the most difficult sequence of chapter 2, and both participants 1 and 2 obviously died a number of times during this sequence. As the game soundtrack loops when a player dies (the music starts again from the beginning, and Max is speaking again to himself in order to recall his current state to the player), the more the diagonals that are present inside the similarity matrix, the more the players had to redo the sequences. Finally, (5) and (6) represent the cut-scene between chapter 2 and 3, which becomes semi-interactive half-way. The player can die during the semi-interactive sequence (they can only move, but not shoot). Participant 2 obviously did not die, as (5) and (6) are vertically continuous, but Participant 1 died once, explaining the horizontal break between (5) and (6). (6) ends when the player regained full interactivity, and participants 1 and 2 played differently from this point onwards, and this, therefore, ends the diagonal.

Thanks to such similarity matrices comparing different player engagements with the same game sequence, it is possible to appreciate the distinct strategies of players (like diagonals (1) and (2) in Figure 4 showing a difference between players who need a customization stage, and players who want to go straight into the action), whilst also demonstrating that difficulty and challenge levels will produce a less fluid experience, causing some players to engage more in some environments rather than others that may have an impact on their motivation, enjoyment and length of game play session (when self-determined outside of research contexts).

## GAMEPLAY REPETITION AND AUTO-SIMILARITY

Similarity matrices can also be employed in order to detect repetitions from within a performance. In this case, the similarity matrix is termed

auto-similarity matrix. In this paper, we propose to use a performance from the game *Battlefield 3* (EA Digital Illusions CE, 2011) in order to demonstrate the usefulness of auto-similarity matrices applied for the study of gameplay performance. The first-person shooter game *Battlefield 3* uses a less musically induced atmosphere than *Max Payne 3*. However, the death sequences and the loading screen following death are recognizable by their highly specific sound background. When comparing a performance with itself, the repetitive moments in a performance with the game *Battlefield 3* are highlighted, and likely to represent death sequences for this specific game.

Figure 5 shows the auto-similarity matrix generated using a 45-minute session with the game *Battlefield 3*. In auto-similarity matrices, the main diagonal must be discarded, as it represents a sub-unit compared with itself. Moreover, auto-similarity matrices are symmetrical using this main diagonal. In Figure 5 several short diagonals can be distinguished, aligned on the same row or column. This means that all these diagonals represent exactly the same sound. Figure 6 is a zoomed version of the bottom right corner of Figure 5, in order to have a better view of these diagonals.

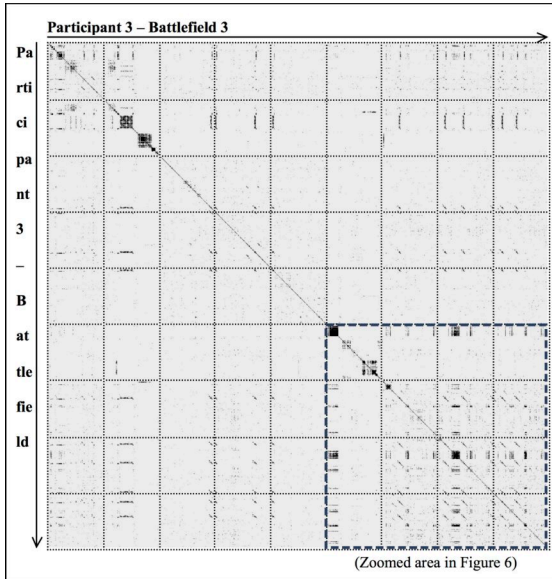
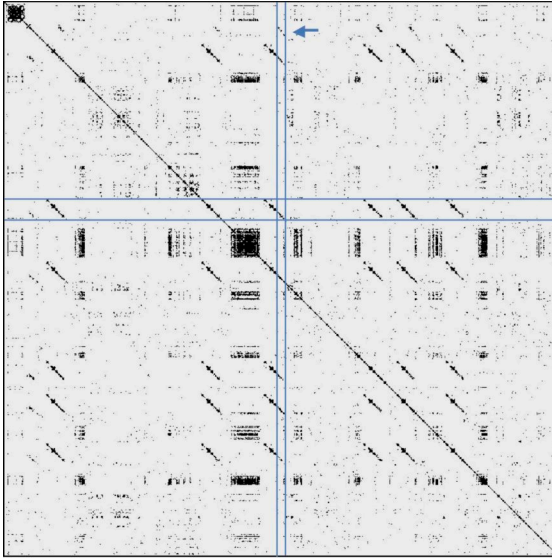


Figure 5: Auto-similarity matrix based on a performance with the game Battlefield 3.

Figure 6 actually represents one of the most difficult sequences in *Battlefield 3*, where the player is asked to protect a bridge from numerous enemies. During this sequence, six deaths can be distinguished at time 1890, 2134, 2233, 2390, 2443 and 2521 seconds, by counting them vertically or horizontally, as showed by the blue lines. But actually, such a matrix representation can highlight more than death screens with *Battlefield 3*. Figure 6 illustrates that a diagonal actually accounts for more than the actual death screen. When dying, a full sequence is repeated: the death screen, the loading screen (with a specific background music) and, importantly, the beginning of the bridge sequence, initiated by the same incoming radio message sent by a member of the team.



*Figure 6: Zoom of the bottom right corner of Figure 5, displaying numerous diagonals indicative of death sequences in Battlefield 3 (see Figure 7)*

Knowing that, the top diagonal in Figure 6 (pointed to by a blue arrow), which is shorter and matches the end of all the death diagonals in this section, actually represents the first instance of the radio message, without any prior death. It is then possible to locate the first time the player entered the difficult section, around 1863 seconds. Thanks to the auto-similarity matrix, it is possible to not only quickly identify difficult sequences when the player is forced to play again after dying, but it is also possible to detect the exact entry point of the difficult section of the game.

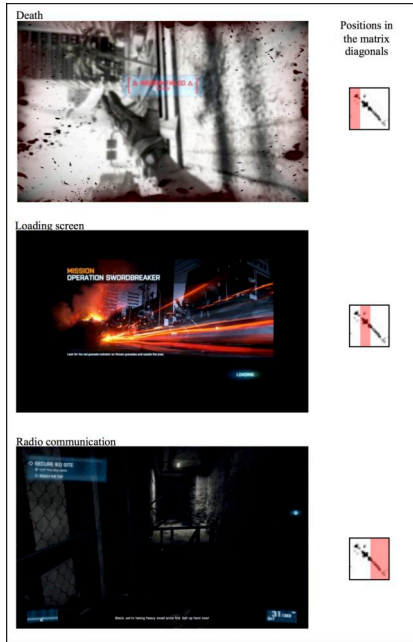
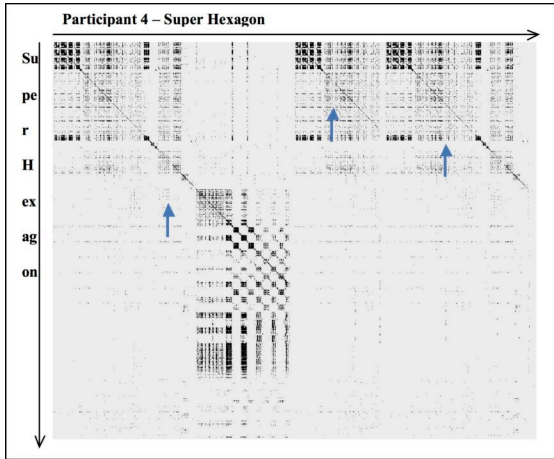


Figure 7: The three sequences constituting a death diagonal in the self-similarity matrix: the actual death screen, the following loading screen, and the restart of the same mission.

Soundtrack SimilarityThe final similarity matrix compares a performance of the game *Super Hexagon* (Terry Cavanagh, 2012) with the original soundtrack of the game. Indeed, in this challenging game, where the main goal consists of surviving for as long as possible, a progressively lively music score accompanies the game play, adding to the intensity. Each time the player loses, the music suddenly stops and is restarted at a random position (anywhere from the beginning to the middle of the score) when the player restarts the game. By comparing the audio of a performance with the original soundtrack, it is possible to have some idea of the player’s level of skill. It is important to note, however, that due to the repetitive nature of the music, some square noises appear on the matrix, which can complicate detection of the diagonals. However, it is still possible to gauge the player’s skill level.

Figure 8 for instance illustrates a highly skilled player who succeeds in surviving for long periods without losing. The matrix in Figure 8 is actually a 4-minute performance of a player who played the same level 3 times, indicating that each performance lasted roughly only one minute.



*Figure 8: Skilled player interacting with Super Hexagon, surviving more than one minute in each session (played three times in four minutes)*

Figure 9, on the other hand, shows a 3-minute performance by a beginner. During this performance, not less than 9 diagonals can be distinguished, indicating that the player never actually survived more than 30 seconds.

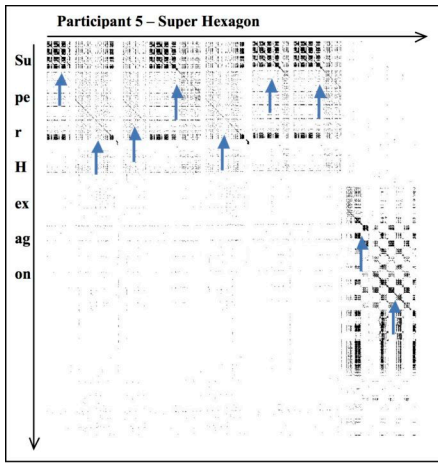


Figure 9: Beginner interacting with Super Hexagon, unable to survive more than 30 seconds (nine “try again” in three minutes).

Thanks to this similarity matrix representation, it is possible, at a glance, to have a clear idea of the skill level of a player, by studying the number of deaths and the repetition of sequences.

## DISCUSSION AND CONCLUSION

This paper showed that similarity matrices, commonly used in computer science for segmenting audio-visual material, can actually also be applied to game studies for the analysis of gameplay performances, and understanding of the player experience. Similarity matrices offer both a means of analysis and a means of visualization, in order to ease the work of game studies researchers interested in exploring a particular dimension of player experience with particular games. This paper has promoted and illustrated the value and use of similarity matrices for the analysis of games, based on recorded audio footage, through three different applications: comparison of performances, intra-performance repetitions detection and player progression assessment by using the audio footage and the game’s original soundtrack.

Moreover, the outcomes derived from similarity matrices analysis can be applied beyond a mono-modal consideration of performances (i.e., where only similarity matrices are considered on their own or in isolation to describe player experience), and can be used in conjunction with other modalities that provide measures of player experience. The modalities of interest include, but are not limited to, biometry and keystroke. For instance, it would be valuable to study the player's controller inputs while redoing similar sequences, in order to assess if the player is reacting similarly or using a different strategy (approach similar to the one published in a previous DiGRA conference (Author et al., 2013)). It would also be interesting to map the detected similarity outcomes with biometric research (Mirza-Babaei et al., 2013; Author et al., 2014) in order to assess whether similar sequences produce similar bodily responses.

However, this paper is only an introduction of what similarity matrices can bring to the understanding of player experience. Indeed, numerous improvements can be made in the future. For instance, the video stream similarity can also be assessed in conjunction with the sound stream, thus reducing the amount of noise inside the matrices when the sound is looped. Moreover, it would be highly valuable to be able to automatically detect the diagonals through the use of image processing algorithms based on the similarity matrix image. For instance, an algorithm that can automatically count the number of distinct diagonals would also automatically classify beginner from skilled players in the *Super Hexagon* example presented above.

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# Video Games and Slavery

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## ABSTRACT

What are the implications of freedom and agency when a player exercises agency to prevent another player or a non-player character from acting freely? Such a scenario, taken to an extreme, would be that of slavery and in turn, would raise questions about the nature of freedom itself. Video games have recently begun to address questions of slavery in earnest although academic discussions on games have not yet caught up: the presence of slavers in *Fallout 3*, the portrayal of racism in *Bioshock Infinite* (Irrational Games 2014) and the direct depiction of the Caribbean slave trade in *Assassin's Creed: Freedom Cry* (Ubisoft 2013) are extremely appropriate cases in point. This article compares the representation of slavery in video games to that of slave narratives in earlier media in order to examine how effectively digital games are able to con-

vey the horrors of slavery as a human condition and what they can teach about the notion of human freedom and agency per se.

### Keywords

Postcolonialism, orientalism, empire-building games, alternative history, plurality

## INTRODUCTION

One of the more controversial issues that video games have recently started addressing directly is that of slavery. Allowing the player to engage in choices that involve enslaving non-player characters within the games, liberating NPCs from slavery or experiencing the game from the perspective of slaves, video games are, arguably, the latest narrative medium to examine this traumatic aspect of human experience. The varied reactions of players to these scenarios bring out the complexity of human attitudes to freedom and liberty as well as the difficulty in describing or articulating the experience of non-freedom. This article aims to compare the video game experience of slavery to that of slave narratives in earlier media in order to examine how effectively digital games are able to convey the horrors of slavery as a human condition and what they can teach about the notion of human freedom and agency per se. In the light of this, the article will also move on to analyse the sense of freedom that video games themselves purportedly embody and offer a further comment on video game agency.

## SLAVERY AS DEPICTED IN VIDEO GAMES

A notable early side-mission in *Fallout 3* (2008) has the protagonist involved in a scenario where (s)he is asked to help liberated slaves relocate to the symbolic Lincoln Memorial. As part of the 'Head of State' quest, the player can choose to help the leader of the slaves, Hannibal Hamlin (so named after President Abraham Lincoln's staunchly aboli-

tionist deputy) or reveal the location of the slaves' hiding place to Leroy Walker (named after the first Confederate secretary of war). The latter results in bad karma. If the player helps the slaves by killing the slavers, this has an impact on the end of the game and the video at the end shows a clip of the restored Lincoln Memorial. Siding with the slavers gives the player free access to the slaver settlement called Paradise Falls where (s)he can take up quests for the slavers.

*BioShock: Infinite* (Irrational Games 2013) is another prominent video game to critique slavery. Alejandro Quan-Madrid describes the gameplay, thus:

A nearby building has something different: A giant statue of Lincoln's assassin, John Wilkes Booth, stands in the lobby. A painting in the dining room depicts Booth shooting a devil version of Lincoln. Where would you find such a statue? Unsurprisingly, it's Columbia's local chapter of the Ku Klux Klan [...] who dress in navy blue and have an occult flair. The giant emblem proclaiming "Protecting our Race" seems to be in the right place. (Quan-Madrid 2012)

Ken Levine, the creator of *BioShock* (Irrational Games 2007), has used the video game medium to highlight important, and often disturbing, issues; that he brings up issues of race and slavery, therefore, comes as no surprise. Levine has since been targeted by white-supremacist groups since he released his game and he states that "I had a very disturbing day where somehow I ended up on a white supremacist website," he told me. "And they said this is a game by — and I'm quoting them — 'the Jew Ken Levine' and it's a 'white-person killing simulator.' That's how they described it." (Quan-Madrid 2012).

Whereas *Fallout 3* and *BioShock: Infinite* address slavery as *one* of many issues in their vast open-world narratives, Ubisoft's *Assassin's Creed: Freedom Cry* (Ubisoft Montreal 2013) has the slave-trading island of Haiti as its setting and its protagonist, a liberated slave called Adewale has made it his mission to liberate the island from slavery. Like the other *Assassin's Creed* games, *Freedom Cry* is set in the historical context of the events that led to the Haitian revolution by Toussaint L'Ouverture.

As Adewale, the player gets to witness (and disrupt, should he choose to) slave-auctions and slave-beatings and to free captive slaves both within and outside the missions. Adewale also aids the Maroon revolution in overthrowing the French colonial rulers of Haiti and the game ends with him stating that although he will return to the Assassin's brotherhood, he intends to spend the rest of his life in trying to help all those who are fighting for freedom.

All of the above examples are those where the protagonist is a free man and has the agency to change the destiny of those who are enslaved. However, some games also tell their stories from the slave's perspective. The game's website describes it thus:

*Thralled* is an interactive experience that portrays the surreal journey of Isaura, a runaway slave separated from her newborn child and tormented by memories of a painful past. Set in 18th-century Brazil, *Thralled* follows Isaura as she traverses a nightmarish representation of the New World, reliving a distorted reminiscence of life in captivity and the events that led to the taking away of her baby boy. (Oliveira 2014)

The protagonist is stalked by a shadowy figure and whenever she comes up against obstacles, she must put her child down to climb over them. If the baby is left alone, he begins to cry thus alerting the shadow that is following them. The shadow steals the baby if he is left alone for too long. When interviewed about the characters, the developer, Miguel Oliveira, states that the shadow represents the slavers who might be chasing Isaura but that 'she's basically chased by this reflection of herself. And what that represents really is we're trying to base the visuals of the experience around cultural references that would relate to the character' (Oliveira 2014). What the video game does in representing the experience of slavery is indeed quite complex and relates to Isaura's experience of selfhood, vulnerability and the memory that haunts her.

The fourth example that comes to mind is the rather controversial *Playing History: The Slave Trade* (Serious Games.net 2014) game. In the game, the player is taken back in time to 'witness the horrors of the slave trade firsthand' as the slave steward on a slave-ship. The most contro-

versial part of the game is a section later named ‘Slave Tetris’ by players where the player has to stack slaves into the hold of a ship almost like the blocks in the cult video game *Tetris*. Not surprisingly, this has outraged people the world over and despite protesting that the game aimed to present the reality of slavery and that people were getting sidetracked by a ‘small 15 secs part of the game’ (Meier 2015), the designers have prudently removed the controversial section. Despite their protestations to the contrary, the depiction of the experience of the slaves is very problematic – to say the least. Especially, when instead of empathising with the slaves, as the game purportedly aims to make its players do, players are supposed to steer the slave ship to America, the conclusions are evidently disturbing. Likewise, when the player-avatar finds out that his sister has been enslaved and all he can do is to ‘stuff her into a slave ship and sail her across the Atlantic’ (Thomas 2015), then this causes further outrage. The horrific experience of chattel-slavery as it existed is impossible to depict and when an attempt to describe such extreme trauma is made, perhaps a different game mechanic, if any, needs to be employed. The fact that this game was designed for educating children is also worrying.

*Playing History: The Slave Trade* illustrates one key problem: the depiction of the experience of slavery is no easy task and whether it is at all possible is a moot question. This issue, however, is one that applies to all of the video games discussed here. Whether as the lone wanderer or the protagonist of *BioShock: Infinite*, the player engages with slavery second-hand. The horror of slavery is obvious, especially as a contrast to the protagonist’s sense of power to free slaves (or not, as the case may be). Both of these games plug into the history of slave trade in the Americas and refer to icons of the American Civil War to approach the question of slavery. The situation of slavery occupies only a small section of the game and the players move on to other parts of the vast open-world scenarios. In *Fallout 3*, the ‘Head of State’ mission is a side-quest and can be avoided by the player. In *Freedom Cry* and *Thralled*, the experience of slavery is more immediate, having been purportedly constructed from the memories of escaped or liberated slaves. Even by



stepping into the shoes of Adewale or Isaura, or indeed any of the protagonists, although it is possible to feel the deep trauma of the situation, the gameplay cannot present the horrors of slavery ‘first-hand’. A comparison with earlier slave narratives and the opinions on slavery across history would be helpful in exploring this question further.

## THE AMBIGUITY IN TALKING ABOUT SLAVERY

Support and criticism of slavery existed concurrently from ancient history. Gregory Vlastos (1941) observes that Plato’s ideal republic contained slaves and that slaves were characterised by a deficiency of reason. According to Donald L. Ross (2008), Aristotle might have agreed with his teacher but his views are more ambiguous: for him ‘the anti-slavery position is wrong because slavery is based on nature, not mere convention; and the traditional pro-slavery position is wrong because the enslavement of war captives is based on convention and not nature’ (Ross 2008). As opposed to this rather notorious claim of slavery being *naturally* ordained, medieval theologians such as Augustine and Duns Scotus have proposed different theories. Augustine accepts slavery but as the result of sin rather than human nature and this he ascribes to the judgement of God. Duns Scotus sees two kinds of slavery as being just: ‘(1) voluntary servitude (e.g. to pay a debt) and (2) in the case of hardened criminals who might otherwise harm themselves or others. Yet, he says that (1) is “foolish” and still may go against the law of nature’ (Nielsen 2009). Later philosophers such as Locke would propose legislations stating that ‘every free man of Carolina shall have absolute power and liberty over his negro slaves’ (Rodriguez 2007; original usage), while ironically, writing that ‘the *natural liberty* of man is to be free from any superior power on earth, and not to be under the will or legislative authority of man, but to have only the law of nature for his rule’ (Rodriguez 2007). Thomas Jefferson, famous for his declaration that ‘all men are created equal’, is believed to have owned six hundred slaves. In the Caribbean and the southern states of the U.S.A, there was widespread support for slavery. Samuel Johnson’s barbed query, ‘How is it

that we hear the loudest yelps for liberty among the drivers of slaves?’ would certainly be uncomfortable for many eighteenth-century American colonists. Many, however, would stubbornly deny the horrors of slavery on the grounds that the condition of the slaves was humane:

The slaves are all well fed, well clad, have plenty of fuel, and are happy. They have no dread of the future—no fear of want. [The slaveholder] is the least selfish of men. The institution of slavery gives full development and full play to the affections. (McGary and Lawson, 1993)

Against these positions, stronger arguments for abolition began to be voiced in later years and the tales of uninhibited cruelty and suffering began to be recounted about the Middle Passage journey of slaves from their African slavers to Europe and America. Olaudah Equiano, the author of one of the first popular slave narratives and abolition campaigner, describes his experience of being in a slave ship:

I was soon put down under the decks, and there I received such a salutation in my nostrils as I had never experienced in my life: so that, with the loathsomeness of the stench and crying together, I became so sick and low that I was not able to eat. I now wished for the last friend, death, to relieve me; but soon, to my grief, two of the white men offered me eatables; and on my refusing to eat, one of them held me fast by the hands, and laid me across I think the windlass, and tied my feet, while the other flogged me severely. (Equiano, 1789)

Quite a different reality often awaited slaves than the American plantation-owner quoted above seemed to have believed and again, the arguments pro and contra slavery were stated from these respective positions.

Bringing a considerable force to the abolitionist argument and at the same time countering the natural acceptance of slavery with the allegations of human guilt, William Wilberforce famously argued his case for the abolition of slavery in Britain in 1789:

I mean not to accuse any one, but to take the shame upon myself, in common, indeed, with the whole parliament of Great Britain, for having suffered this horrid trade to be carried on under their authority. We are all guilty—we ought all to plead guilty, and not to exculpate ourselves by throwing the blame on others; and I therefore deprecate every kind of reflection against

the various descriptions of people who are more immediately involved in this wretched business. (Wilberforce 1789)

The American reformer and former slave, Frederick Douglass, spoke in similar terms in 1852 in his famous Fourth of July speech where he criticised slavery in the American South stating that it was ‘inhuman mockery and sacrilegious irony’ to drag a man in fetters to the temple of liberty. Nevertheless, even among abolitionist positions, there tended to be ambiguity. The agenda for *The New England Anti-Slavery Almanac* for 1841 seems to return to the philosophical positions of Plato and Aristotle on reason and slavery while, of course, advocating a different future for slaves:

Things for the Abolitionist to Do,

Speak for the Slave, 2. Write for the Slave, . . .

*They can't take care of themselves.* (Davis and Gates, 1991, iv; italics mine)

The history of the challenge to the slave-trade and its abolition in Europe, the United States and the Caribbean islands is too long and complex to recount in this discussion. What is obvious from this brief and incomplete outline is that the issue has, rather disturbingly, been one where there has been a lot of ambiguity. The experience of the slave, too, is not one that can be represented with ease. While the descriptions in the slave-narratives and the strong denunciations by the abolitionists make the trauma of slavery self-evident, as Douglass states:

The free human being “cannot see things in the same light with the slave, because he does not, and cannot, look from the same point from which the slave does.” The terms of the opposition here are “slave” and “free human being,” not black and white. (Davis and Gates, 1991, xiii)

The slave’s experience, including Douglass’s own, is described *after* the event and mostly from memory. The postcolonial scholar, Homi Bhabha (1994), describes the tragic lesson of slavery for the Haitian slave and liberator, Toussaint L’Ouverture and others as the realisation that they have a split consciousness, where, even in the egalitarian milieu of the

French Revolution and American Independence, for them ‘the reinvention of the self and remaking of the social are strictly out of joint’ (Bhabha 1994). To approach the experience of slavery in any sensible way, it is necessary to address the issues of selfhood of slaves and the memory through which they reconstructed their experiences in their narratives. As Bhabha points out, even in the reinvention of their selfhood, a split is evident especially when one considers how the ex-slaves see themselves within their social milieu.

Henry Louis Gates mentions the following anecdote to point towards the relationship between the absence of selfhood and enslavement:

It was a morning in April, sharp, crisp and clear, and we were rounding a bend in the Ohio River just below Wheeling when I caught sight of a strapping darky, an ax flung over his shoulder, jogging along on the Virginia bank of the river, singing as he went [...]

“Halloo, there! Where are you going?” I called to him. “Gwine choppin in de woods!” “Chopping for yourself?”

“*Han’t got no self.*”

“Slave, are you?” “Dat’s what I is.” (Wood 1897, 202)

Gates’s example poignantly illustrates the lack of selfhood and agency that characterises slavery; the slave’s experience when articulated is, therefore, a remembered experience and a description that is *after* the event. The slave-narrative is, it is being argued here, a *post facto* account and it is only when the transition from slavery to freedom has been made that this can be recounted from memory. The question arises now as to what happens in the video games that address slavery.

## PLAYER REACTIONS TO SLAVERY IN VIDEO GAMES

The player’s experience in video games has been considered to be more immediate in that the player is directly involved in the context and has to execute non-trivial decisions to engage with the game; it has often been described as immersion (Murray 1997), involvement or incorpora-

tion (Calleja 2011) by various commentators. It is important to note that in the games that portray slavery, the player almost always plays as a free person – either as an outsider to slavery (*Fallout 3* and *BioShock: Infinite*) or a former slave (*Freedom Cry* or *Thralled*). For games such as the controversial *Playing History* episode, the player’s avatar is made into a caricature that scarcely has the player feeling involved in the scenario. One of the possible explanations is that it is impossible to play from the position of a slave as that involves an absence of agency and selfhood. Consider the anecdote that Gates narrates about the slave who is on his way to chop wood: even in a game such as *Freedom Cry*, the player can only engage with slavery by freeing the slaves and witnessing their condition, as they are either tortured, sold or imprisoned. On freeing the slaves, the interaction the player has with the NPCs (non-player characters) is limited to quickly said words of gratitude or mostly silence. What Adewale, the protagonist, thinks as he engages with the slaves he frees and what he remembers of his own previous enslaved existence are things that the player never gets to know. Isaura, in *Thralled*, is in turn, depicted as struggling to escape a shadow that may be her physical pursuers or the recollection of her past torments. For Adewale and Isaura, the experience of slavery is reconstructed through memory just as it is for the narrators of the slave-narratives such as Douglass. The player is forever unable to approach the trauma of slavery first-hand and to talk about it is to either reconstruct it through the remembered fears of Isaura and Adewale or to approach it as outsiders such as the Lone Wanderer or the protagonist of *BioShock: Infinite*, who are, as it were, tourists to the terrible world of slavery. Speaking about the issues of race in online and digital media, Lisa Nakamura has called the phenomenon of roleplaying other races ‘identity tourism’. In the games that address questions of slavery, however, if there is any identity tourism, it is certainly not possible from the perspective of the slave.

Whereas one would expect clarity in positions regarding slavery after its abolition in most parts of the world over a century ago, it comes as a surprise to see that the earlier ambiguities about the institution are as relevant as ever. *Fallout 3* actually has a mod that supports slavery and

enables those who do so to enslave NPCs. Just as Levine had remarked of the white supremacists who had criticised him, in *Fallout 3*, the *FFNCQ* mod boasts a ‘a complete new slavery system where almost every NPC can be enslaved, follow the player, be placed anywhere (also DLC spaces) and !! don’t !! get lost, aggressive or loose equipment [sic]’ (nexusmods 1999). The detailed attention to introducing a system of slavery clearly is symptomatic of rather problematic positions vis-à-vis one of the most tragic practices in the history of humanity. Often, the problem is not expressed in as clear-cut terms as a direct upholding of slavery. In the *Playing History* game, the designer’s aim ‘put the student in the middle of important and interesting points in history’ ended up being heavily critiqued across the world and called ‘at best, an inappropriate way of educating kids about slavery. On Twitter the game was called “dehumanising” and “sick”’ (Yin-Poole 2015). Similarly, *Freedom Cry*, as directly critical as it is of slavery, nevertheless turns the freeing of slaves into a rewards-system that has also been criticised as converting slaves into currency. As an article on *Kotaku* describes it:

Some of Chris Franklin’s comments touch on *Freedom Cry*’s biggest problem, namely the way the game’s mechanics essentially has the player treating freed slaves like a resource to purchase stuff. That mechanic is uncomfortably close to the way that slaves were used in the bondage that players are supposed to be freeing them from. (Narcisse 2014)

Clearly, from the extremely pro-slavery and racist stances to the more complicated inadvertent support, the differences in the reactions to slavery are quite obvious. Just as the philosophical positions on the topic show both marked polarisation and ambiguity, the same is true of video games. One sees a parallel in Alejo Carpentier’s fictional account of slavery in Haiti, at the end of which where his protagonist, the ex-slave Ti Noel, tries to make sense of his situation after returning to his country after slavery has been abolished. Just as he engages with his memories of slavery on a plantation on the island, he is drafted into forced labour by the former slaves who have now liberated Haiti. That Ti Noel is confused when faced with a situation akin to slavery by the so-called liberators of slaves is, therefore, hardly surprising.

## CONCLUSION: THE VIDEO GAME AS A REMEDIATION OF THE SLAVE NATION

Akin to the slave narratives, as told in older media, the way in which the video games discussed here address the issue of slavery is fraught with both distance and ambiguity; yet, at the same time, the experience can be one of great trauma. When the player, faced with the ultimate non-agency of the situation of slavery thinks of the impossibility of play, the trauma is palpable not through the experience of play but the realisation of the absence of play. The video games discussed here illustrate the limits of play that are seen through the context of their own playing out. Taken in terms of larger questions of agency, the slavery video games also serve as a metaphor for the agency involved in play itself by pointing at the non-freedom or the always-extant other of the freedom that is perceived in play. Similarly, just as the slave-narrative serves as a genre that illustrates the limits of representation – in that it can only tell its story as a memory or a distant narration of its complex ambiguity and trauma – it can be argued that the video games discussed here too are a ‘remediation’ of this genre of narrative and carry forward its concerns and experience in similar ways.

*Uncle Tom’s Cabin*, probably the world’s best known novel about slavery, leaves its readers with the feeling of immense trauma, so much so that Abraham Lincoln supposedly greeted its author, Harriet Beecher Stowe, saying, ‘So you’re the little woman who wrote the book that started this great war’. Part of the trauma, however, is in the realisation that the trauma involved in slavery can never be expressed by any medium that allows freedom. The trauma is also one of ambiguity. Many contemporary readers denied the truth of the narrative and accused Stowe of fabricating unrealistic images. Some even sought support for slavery in the Bible. One and a half centuries from the publication of Stowe’s novel, video games such as *Freedom Cry*, *Fallout 3* and *BioShock: Infinite* face similar questions. Even walking in the shoes of the ex-slave or even the slave as an avatar, the trauma of non-freedom is palpable but still distant to the experience of play. Similarly, despite

the modern notions of diversity and respect, the support for virtual slavery within the games seems to raise the same old questions and the video game, then, remediates the narrative of slavery in its own way.

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This is definitely an experiment in the notion of publishing, and we invite people to participate. We are exploring what it means to "publish" across multiple media and multiple versions. We believe this is the future of publication, bridging virtual and physical media with fluid versions of publications as well as enabling the creative blurring of what constitutes reading and writing.

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