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EDITED BY
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Introduction

Introduction to DiGRA Italia Issue: selected articles from the 2017-2018 conferences

Paolo Ruffino

This special issue of ToDiGRA gathers some of the best papers presented between 2017 and 2018 at the first three national conferences of the Italian division of DiGRA. The selection is emblematic of the diversity of the contributions received so far. Authors were invited to submit proposals at the end of the third national conference in June 2018. We received a total of 13 proposals, eight of which were invited to submit a full article. The triple-blind peer-reviewing process was used to select a final list of four articles. The selection process was more complex than what would normally be expected in the preparation of a journal issue. The theoretical framework supporting most of the submissions

was not necessarily aligned to the literature, methodologies and questions that can be found in anglophone studies on digital games. On the one hand, knowledge of relevant international literature was considered a prerequisite for being accepted for publication, and on the other, we decided to preserve the originality of those submissions that were drawing on literature and methodologies not typically represented at international DiGRA conferences. The selection was carried with due consideration of various approaches, to find a compromise that could work for both the authors and the expected readers of this issue. Overall, the process involved continuous revisions and rewriting over the course of one year, aimed at preserving the original methodologies and arguments, while establishing a dialogue with the international scholarship.

Indeed, this preliminary observation does not apply to all submissions in the same manner. The article by Marco Liboà ('Hardware Design and Representation of Graphics in Videogames. A case study: the Sega Saturn') was originally prepared while studying at ITU in Copenhagen, Denmark. The research project was developed in the years that followed by drawing on recent literature in the areas of platform and hardware studies. Liboà takes the Sega Saturn as a point of departure to analyse the technological and historical complexity of studying video game hardware. The main case study is the porting of Virtua Fighter from coin-op to console, and the aesthetic and technical choices made during this process by the developers. The article combines an archaeological perspective with a cross-media problematisation: the object of study is analysed in its transition across platforms. The article was first presented at the national conference at IULM in Milan on May 12th, 2017. The conference (titled *Testi, contesti e pretesti videoludici*) attracted more than 90 attendees and featured 15 presentations, two panels, and international speakers such as Cindy Poremba (OCAD University in Toronto), Sebastian Möring (University of Potsdam) and Daniel Vella (University of Malta). Papers were very diverse, and included interventions in semiotics, pedagogy, critical design, and

media arts. An unexpected success which motivated us to organize further conferences and events.

The article, 'The Italian Mafia in Video Games: Influences and reframings from Cosa Nostra movies to contemporary games' was originally presented by Giulio Pitroso at our second conference in December 2017. The event was hosted by Vigamus, the video game museum in Rome, and gathered contributions on the history of the Italian game industry and the representation of Italian culture in video games. The article is more closely aligned to the tradition of semiotic and textual analysis that is largely present in Italian academies. Pitroso analyses how representations of Mafia migrate across media, from cinema to literature and video games. The article investigates the representation of Italian Mafia in games such as The Godfather (US Gold, 1991), inspired by the more famous novel by Mario Puzo (1969) and film by Francis Ford Coppola (1972), and more recent titles such as the Mafia series (2K Games). The article looks at how these texts influence the representation of organised crime in series such as Grand Theft Auto, where Mafia symbols and values make frequent appearances. These representations are built on a general framework of sociolinguistic tactics, which replicate and reinforce stereotypes about a generic 'mafia' that does not necessarily correspond to a specific criminal organisation. Moreover, these games tend to reinforce a mythological perception of criminal groups that have a tragic impact on the lives of many (in Italy and abroad). As discussed in investigative journalism on organised crime, such as the work by Roberto Saviano (see Gomorrah, 2006), the myths surrounding fictional Mafias and their more tragic enactments often inspire each other in a vicious circle.

The third and fourth contributions to this issue were originally presented at the 2018 conference in Palermo. The event was hosted by the Sicilia Queer Film Festival and organised in collaboration with Women in Games Italy and CIRQUE (a student association for the study of queer cultures). The conference explored the

relation between gender studies and game culture, and hosted talks on game design practices within LGBTQI networks.

Dalila Forni, a PhD student from the University of Florence, is the author of 'Horizon Zero Dawn: The educational influence of video games in counteracting gender stereotypes'. Forni analyses the game Horizon Zero Dawn (Guerrilla Games, 2017) through its internal dialogues and narrative. The game is explored as if it was an educational tool for teaching gender stereotypes, drawing on literature on both pedagogy and gender studies. Horizon, according to Forni, is not just an inclusive game with a varied representation of genders and sexual orientations. It also frequently hints at the very process of questioning gender norms, making it a unique case of mainstream video game which explicitly challenges societal conventions on sexuality. Forni has been drawing on the work carried out for her doctoral research project at the University of Florence, while opening her perspective to the international scholarship that has been developed in recent years on gender and games. The outcome of this process is a (queer) cut across various disciplines.

The fourth contribution to this issue was received from the United Kingdom and is more closely aligned with the anglophone tradition of game studies. The article 'The Streetfighter Lady: Invisibility and gender in game composition' by Hillegonda Rietveld and Andy Lemon from London South Bank University was originally presented in Palermo, and later developed in a full article. The analysis follows the story of Yoko Shimomura, the female composer of the soundtrack of Street Fighter II (Capcom, 1991). The story of Shimomura is emblematic of a double process of invisibility. First, she suffered from the invisibility of music composers, who are not always credited and given the deserved merit in the production of video games. Second, she also shared the invisibility of women in game studios and game culture. Shimomura, according to Rietveld and Lemon, performatively reproduced the imagined hyper-masculinity that was expected by consumers of video games, hiding her own practice of gender role-

play behind her composition. The case study is significant from a historical perspective, as it highlights the complexity of gendered forms of exclusion in video game culture.

We hope that the articles will be of interest to the game studies community. They represent only a sample of the breadth of research presented so far at our national conferences. Game studies in Italy have been extremely prolific in recent years, and have only recently started to communicate more closely with the anglophone research community. The presence of Italian scholars abroad, and of international scholars at Italian conferences, and events such as the international DiGRA conference that was held in Turin in 2018, are certainly contributing in a positive manner to this process. The imminent (at the time of writing) national conference at the University of Turin in October 2019 is further evidence of the growing interest in game studies, and will provide a forum for knowledge exchange with scholars expected to travel from the United Kingdom, Germany and Scandinavian countries.

ACKNOWLEDGMENTS

1.

Hardware design and representation of graphics in videogames

A case study: the Sega Saturn

Marco Liboà

ABSTRACT

The paper focuses on how the design of the hardware supports and
constrains the representation of graphics in videogames. The Sega
Saturn was chosen as a platform of study due to the complexity
of its internal circuitry and the period during which it was
commercialised, characterised by a shift in the representation of
game graphics from 2D to 3D. The peculiar characteristics of
Saturn's two video display processors and the way they shape

the graphics of games developed for it are presented in a few selected examples. In particular, it illustrates how a 3D space can be simulated by means of 2D background layers, and how hardware limitations and different video-signals can affect the final rendering of game graphics. It concludes that different graphical techniques, present in a certain episode of a game series, could be absent in a direct sequel and then reappear all together in a later episode, leading to a non-linear technological innovation trajectory. Furthermore, it is ascertained that the Saturn hardware architecture influenced the efforts of developers in subtle and unexpected ways.

Keywords

Sega Saturn, Platform Studies, Hardware

INTRODUCTION

So far, videogames have been analysed from a variety of different perspectives, including, but not limited to, those of humanities, narratology, human-computer interaction, semiotics, discourse analysis, psychoanalysis, social, cultural and literary studies. All these different approaches have positively contributed to the development of the multidisciplinary field of game studies. In this article, I will focus on how the design of the hardware supports and constrains the representation of graphics in games developed for a specific platform, the Sega Saturn. In using the term platform, I mean computing platform, such as those that enable procedural works, i.e. works enacted by processes and algorithms executed by the platform itself (Montfort & Bogost, 2009).

The Sega Saturn is a Japanese videogame console, designed and produced by Sega. It was commercialised during the second half of the 1990s, a period characterised by the shift from 2D sprite-based to 3D polygon-based graphics. This shift is mirrored in the complex hardware of the system, designed to handle both

the graphics paradigm of the previous console generation and the new one that was starting to take hold in the arcades due to companies like Namco and Sega itself. In order to achieve such a feat, the Saturn relies heavily on parallel computation and is equipped with a dual physical CPU and two video display processors, the VDP1 and the VDP2, the former dedicated to the drawing of sprites and polygons, and the latter dedicated to the drawing of 2D background layers (Figure 1). Due to its hardware complexity, the Saturn is a notoriously difficult console to program; which, in my view, would be an interesting topic of study. Furthermore, as pointed out by Apperley and Parikka (2018), so far platform studies have focused on commercially successful consoles and home computers, and therefore, analysing a platform like the Saturn, which is considered a commercial failure, is valuable progress in further expanding the platform studies approach. Apperley and Parikka question the limitations of a platform study on a "failed" platform. Even though I do not consider the Saturn a failed platform, since it is still the most successful Sega console in Japan (Donovan, 2010), I nevertheless encountered some difficulties in creating a proper "archive". As explained by Apperley and Parikka, a platform studies' archive includes software developed for the platform, usually games, and "developer interviews, end user responses, and other material from the video game subculture that Mia Consalvo (2007) has dubbed "paratexts" – primarily journalism and marketing materials" (Apperley & Parikka, 2018). Although the archive that I used to study the platform is mostly comprised of games, I integrated it with the official development kit documentation found on internet forums – an indication of a past hobbyist dev scene, without which the documentation would have not been preserved – and with the use of emulators. Creating this last part of the archive for an unsuccessful platform is where I found most issues, compared to a successful one. Unfortunately, Saturn emulation is not in a very good state, presenting stability, fidelity and compatibility issues. For this reason, I also had to use an original Saturn console connected to a CRT TV to complete this case study.
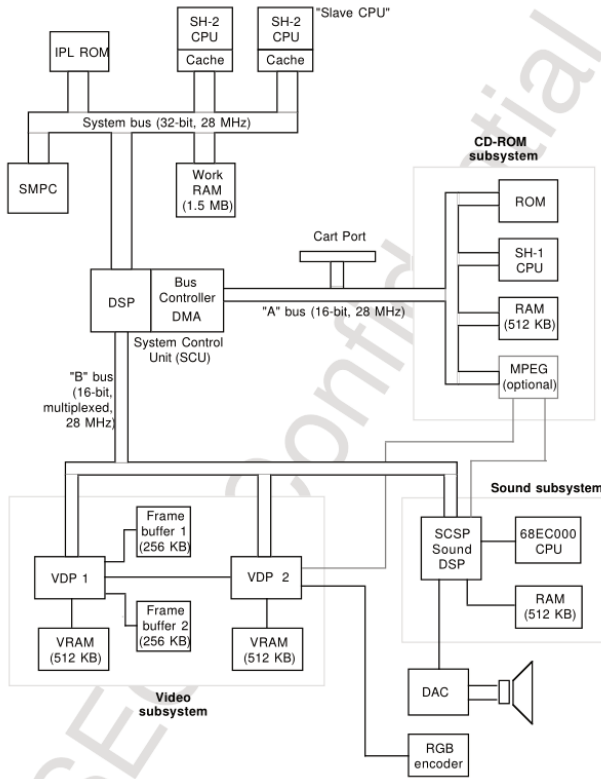
Figure 1: Sega Saturn block diagrams (Sega of America, 1994a)

Regarding the games selected as part of the platform archive, I will provide an analysis of a specific game series, *Virtua Fighter*, to show how the developers used 2D images to simulate a space that was 3D modelled in the original arcade version of the game, and developed for more computationally powerful hardware. Thereafter, I will illustrate how the hardware design of the console limits the usage of the half-transparent effect, a technique applied to represent translucent materials in graphics, and even how the type of cable used to connect the console to the TV can alter the final rendering of the image in a significant way.

A WORLD OF LAYERS

As pointed out by Arsenault in his book, "Super Power, Spoony Bards, and Silverware" (2017), on the Super Nintendo, when a new console is released, the available games need to fulfil a double purpose: they have to both persuade the gamers to buy the product, by offering established game genres, and attract developers to the new creative possibilities offered by the platform. The responsibility for showing the 3D capabilities of the Saturn fell upon the port of one of the most successful Sega arcade games at the time: *Virtua Fighter* (Sega 1993).

Virtua Fighter perfectly represents the characteristics of a launch title identified by Arsenault (ibid.): it is representative of a very well-established genre, the one-vs-one fighting game, and, at the same time, it completely revolutionises the graphical paradigm utilized in the genre by replacing 2D sprites and backgrounds with full 3D polygonal graphics. *Virtua Fighter* was one of the first 3D fighting games to appear in the arcades in the middle of the 1990s, and it was so successful that it even influenced the development of Sega's competitor console, the Sony PlayStation (Asakura, 2000). It was by no means the first 3D game: in fact, polygonal graphics had already been used in driving and racing simulators a few years before.[1] However, *Virtua Fighter* was one of the first games to represent human characters by means of polygons. Even though it can be argued that, from a visual standpoint, *Virtua Fighter* characters do not look as detailed as a typical 2D character, the use of 3D graphics allowed developers to implement realistic animations and camera movement techniques that, back then, were considered innovative (Pettus, 2013).

Virtua Fighter was one of the most successful games in Japanese arcades, and Sega obviously ported it as a launch title for its main console. The Sega Saturn was released on 22 November, 1994, in Japan, and *Virtua Fighter* was one of the titles available at launch. The game was a commercial success, selling almost 1:1 with the console. From a marketing point of view, *Virtua Fighter* can be

considered a killer-application, i.e. a piece of software available exclusively for a specific platform, and that alone is a reason for the purchase of the new hardware. However, a very rushed development greatly hindered the quality of the porting, resulting in several graphical glitches, especially compared to the arcade version. For example, in the Saturn version, some of the polygons that shape the characters are affected by a flickering effect that is not present in the arcade version. The next paragraph, after a brief overview of the Saturn CPU and its video sub-system, describes how the original arcade version of the game was adapted to the hardware characteristics of the console.

In order to enable the Saturn to run ported arcade games that were developed on very powerful and expensive machines, Sega engineers relied heavily on parallel computation in designing its hardware architecture. Having the main CPU offload certain operations to other coprocessors was not, by any means, a novelty. For example, the Atari VCS was already equipped with a custom microchip, the *Television Interface Adaptor* (TIA) to handle the drawing of the image to the screen (Montfort & Bogost, 2009). In the Commodore Amiga, the Motorola 68000 CPU offloads some of its operations to three different microprocessors called *Denise, Paula* and *Agnus*. While Denise is responsible for drawing graphics, and Paula handles I/O and sound, Agnus manages both microprocessors to prevent conflicts with each other and the CPU (Maher, 2012). In a similar way, the Saturn CPU offloads graphical operations to the VDP1 and the VDP2, and the input and peripheral management to the *System Management and Peripheral Control* (SMPC), which is also in charge of coordinating the whole system, much like Agnus does in the Amiga. However, not only is the Saturn equipped with many microprocessors specifically designed for different tasks, it also has two physical CPUs, a pair of SH-2 Hitachi microprocessors, set in a master-slave configuration. One SH-2 is set as a master CPU, while the other is set as the slave, and is subordinate to the first CPU. Both CPUs have access to two megabytes of RAM through the system bus, and each has four kilobytes of cache memory. Since both CPUs

share the same memory bus, access to it is mutually exclusive, therefore, optimising the use of their internal cache memory is essential in order for the system to achieve maximum performance. However, as previously mentioned, the Saturn is also equipped with two video display processors, the VDP1 and VDP2, the former dedicated to drawing sprites and the latter to drawing background layers. The VDP1's capabilities include scaling, rotation and twisting of sprites, which are the modelling base of any 3D game on the Saturn, in a similar way as triangles are the basic element of 3D modelling nowadays.2 On the other hand, the main purpose of the VDP2 is to plot the "scroll screen" and it is usually employed to draw the background and the GUI in Saturn videogames. The scroll screen consists of different layers, defined either as screens or backgrounds in the official Sega documentation, each one entrusted with a specific set of operations and transformations. Specifically, the VDP2 can plot up to four different background layers that can be moved up, down, left or right. These are defined as normal backgrounds, from normal background zero (NBG0) to normal background three (NBG3). The NBG0 and the NBG1 can also be scaled horizontally or vertically (zoomed in or zoomed out). However, this feature is not available for the NBG2 or the NGB3, making the first two layers more suitable for drawing the actual background of a game scene, such as the sky, and the last two layers more convenient for drawing interface elements. Background layers that can also be rotated and scaled along their axes are defined as rotation background layers. The VDP2 can draw up to two rotation background layers at a time, with the identifiers being rotation background zero (RBG0) and rotation background one (RBG1). Finally, the last two screens that compose the scroll screen are the line colour screen and the back screen. The line colour screen is a special layer used for colour calculations, while the back screen is the default colour to be displayed for pixels that are not covered by any other layer. The VDP2 can, at the same time, plot up to either four normal backgrounds, or three normal backgrounds and one rotation background, or only two rotation backgrounds. By carefully designing and combining all the different background

layers, developers can simulate a three-dimensional space by using only two-dimensional planes. For example, a common technique is parallax scrolling, i.e. "the movement of different background layers at different speeds to simulate a depth of field that increases the perceptual illusion of perspective" (Arsenault, Côté, Larochelle & Lebel, 2013). Another common technique to simulate a three-dimensional space with a planar projection is the usage of a rotation background as the surface over which the action takes place. This technique is extensively used in videogames made for the Super Nintendo Entertainment System (ibid.) and it is possible to reproduce it on the Saturn by using a rotation background.

Figure 2a: Virtua Fighter on Sega Saturn

Figure 2b: VDP1 framebuffer (sprites plane)
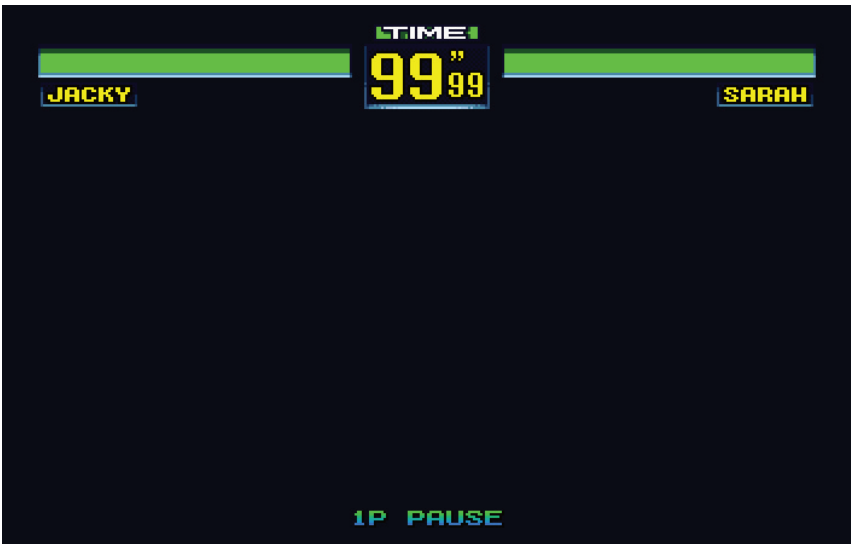
Figure 2c: NBG0 (interface)
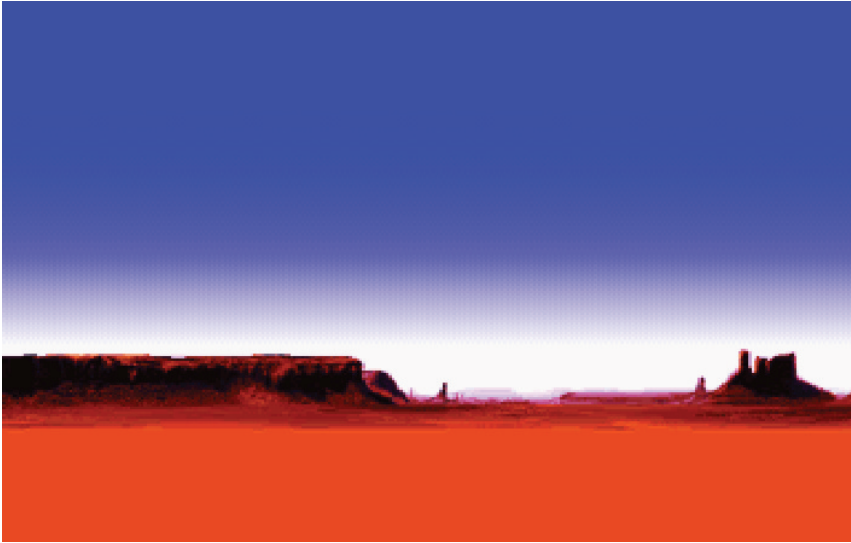
Figure 2d: NBG1

Unsurprisingly, in the Saturn porting of *Virtua Fighter*, the VDP1 is used to draw the two characters and the ring, while the VDP2 is used to draw the background and the interface. A standard scene from the game is composed of the two fighters in a ring, a distant background representing the stage, and the game interface (Figure 2a). The information shown in the interface at the top of the screen includes the health bars and the name of the characters, along with the round countdown timer and the victory points. At the bottom of the screen, a number indicating the round, a pause message and the total play time are displayed. In order to help the reader understand which elements in the scene are drawn by each video processor, a series of screenshots, with the different screen layers turned on and off, will be used throughout this paper. As shown in Figure 3, the game interface is mostly drawn by the VDP2 in NBG0, with the notable exceptions of the victory points and the total play time in the bottom right-hand corner, which are both drawn using sprites. It is worth noticing that, while the round countdown timer is part of the interface, the total play time is drawn by using sprites. One possible reason could be that the interface is reset at the start of each round (both health bars and timer) while the total play time

has to be stored between rounds. If the total play time had also been part of the interface, it would have been reset as well, losing the information it was supposed to show.

Figure 3: NBG0 disabled, part of the interface is no longer visible.

Each stage of the game is represented by a different bitmap image. At the start of the round, the bitmap is loaded in the portion of memory reserved for the NBG1. Once the fight starts, and during the replays, the bitmap is moved along the horizontal and vertical axis according to the movement of the camera, so as to give the appearance of a 3D space around the fighters. However, since the distant background is just a plain image that cannot dynamically adjust its linear projection based on the point of view of the camera, the bitmap itself has to be drawn in a specific way. Basically, the bottom part of the bitmap is used to simulate the presence of a terrain around the ring (Figure 2d). In fact, in the scene there is an invisible plane, parallel to the ground, which is used as a collider on which the characters land when they are thrown out of the ring. The part that represents the terrain is just a vertical background, mono-coloured in order to look identical from any point of view. Even when the camera frames the scene from up above during a replay, the background is drawn in such

a way that only the single coloured part of the NBG1 is actually visible. The representation of a 3D space is achieved by drawing both the ring and the characters using polygons, accordingly to linear projection rules. Furthermore, the use of polygons allowed developers to simulate the presence of a landscape that is very far away by zooming in and out of the characters and the ring when necessary, while keeping the background image fixed, in order to add depth to the scene.

A few months after the release of *Virtua Fighter* for the Saturn, Sega released an updated version titled *Virtua Fighter Remix* (Sega 1995), which was given for free to all Saturn users in the U.S. as an apology for the poor porting of the previous game (Pettus, 2013). *Virtua Fighter Remix* is an improved version of the original game with characters made of textured polygons instead of flat shaded polygons. The next paragraph shows how developers assigned the computation of the graphical elements of the game to the various Saturn microchips, in order to deliver a better-looking game just a few months after the release of the original port.

Figure 4: Texture mapped characters in Virtua Fighters Remix.

Figure 4 shows the different appearance of the characters, which are drawn using textured polygons instead of flat shaded polygons. Taking into consideration how the platform already struggled to port the original game, it would be interesting to investigate how the developers managed to find new computational resources to use texture mapping, instead of flat shading. An analysis of the NBG0 and the NBG1 reveals that these two layers are still used to draw, respectively, the interface elements and the distant background, as shown in Figures 5b and 5c. Instead, an investigation of the RBG0 reveals that in *Virtua Fighters Remix* the ring is not drawn using sprites, but its surface is a rotated plane, as shown in Figure 5d. The surface of the ring is a single bitmap image rotated and scaled to simulate a flat horizontal plane, an effect similar to Super Nintendo's "mode 7" (Arsenault & Côté, 2013). By using this technique, the developers were able to reduce the number of polygons drawn on the screen, freeing some resources from the VDP1 and increasing the computational load on the VDP2. These resources could then be used to draw more detailed characters. It is important to remember that each of the Saturn video graphic processors has its own bank of VRAM: not using the VDP2 to its fullest means wasting some precious memory, since the VDP1 cannot access the VDP2 memory. As a last detail, the sides and the edge of the ring are still drawn using polygons (figure 5a). However, it seems that texture mapping hindered programmers from using dynamic lighting in the game. This is especially visible in stage 3: in the original *Virtua Fighter* port, the floor is a source of light that illuminates the characters from below (Figure 6a); in *Virtua Fighter Remix* there is no light source and no shadows are drawn on the characters. Self-shadowing is, in fact, absent in all stages of this second version of the game (Figure 6b). This is an interesting example of how, due to the platform limitations, a technological innovation present in *Virtua Fighter,* like dynamic lighting, had to be removed in its remake in order to use another technological innovation: texture mapping. One would expect the trajectory of a technological innovation (Arsenault & Côté, 2013) to always move forward, but instead, in the case of the Saturn, it seems to have followed

a fluctuating curve. As a matter of fact, texture mapping and dynamic lighting were used at the same time on the Saturn only in the second half of its life-cycle (Figure 7). Not even the much-praised Saturn port of *Virtua Fighter 2* (Sega 1994) achieved this feat, mostly because it runs in high resolution and, in this mode, the lighting calculation is disabled due to a hardware limitation.3 Despite this restriction, the Saturn version of *Virtua Fighter 2* is one of the most important examples of how improved development environments and tools can enhance the game making process. *Virtua Fighter 2* is one of the first games developed with the Saturn Graphics Library (SGL), a library written in C language and released by Sega in order to ease the development of 3D games on Saturn. From a technical perspective the game is considered a masterpiece, running in high resolution, double density interlaced mode (704*448) at 60 frames-per-second and simultaneously using four background layers: NBG0, NBG1, NBG2 and RBG0. However, being a port of a game originally developed for much more computationally powerful hardware − the Sega Model 2 − the developers had to compromise on the final graphic fidelity. Characters, models, textures and animations are very similar to the arcade counterparts, apart from some minor differences (e.g. the hair animation of most characters was removed). As previously mentioned, the biggest difference regarding the characters is the absence of dynamic lighting in the scene and, consequently, in the Saturn version there are no shadows on the 3D models of the fighters, as seen in Figures 8a and 8b. The two most important technological innovations introduced by *Virtua Fighter 2* (especially in comparison with the original *Virtua Fighter)*4 were the adoption of texture mapping for the characters and the presence of 3D-modelled structures in the space around the ring. Taking into consideration the computational power difference between the Saturn and the Model 2, it was not possible for the developers to fully model the background in 3D on the console version, so they had to rely on the peculiar 2D capabilities of the VDP2 in order to provide a port as faithful as possible to the original arcade game. In *Virtua Fighter 2*, the interface elements are drawn in the NBG2, as demonstrated in Figure 9e. The NBG0 displays a 2D image

that represents the 3D background elements of the arcade version, while the NBG1 is used to draw the distant background as seen in *Virtua Fighter* (Figures 9c and 9d). As previously mentioned, the ring in *Virtua Fighter Remix* is drawn using the RBG0, however, in *Virtua Fighter 2*, sprites are only used to draw the sides of the ring and not the edge (Figures 9f and 9b). By scaling and moving the NBG0 and the NBG1 at different speeds with respect to one another, the developers managed to create a parallax effect that simulates the presence of an actual 3D space between the ring and the first background image (NBG0), and between the latter and the second background image (NBG1).
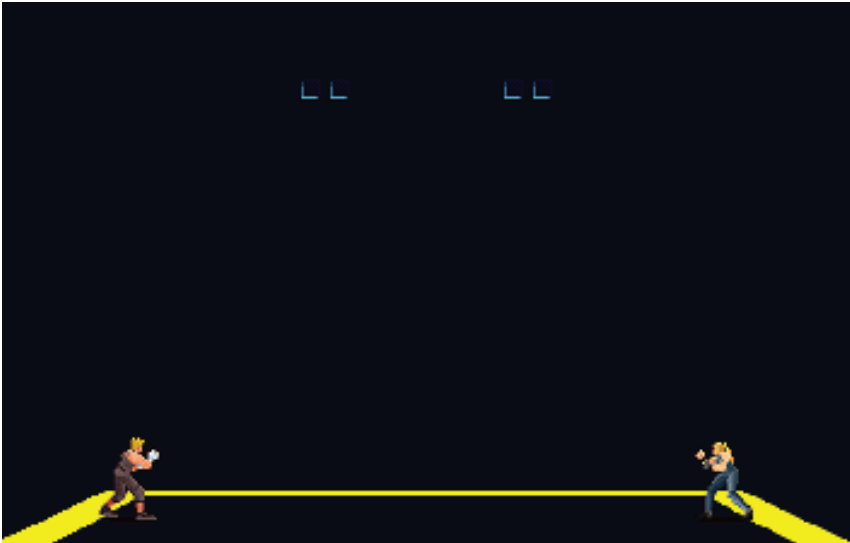
Figure 5a: VDP1framebuffer

Figure 5b: NBG0
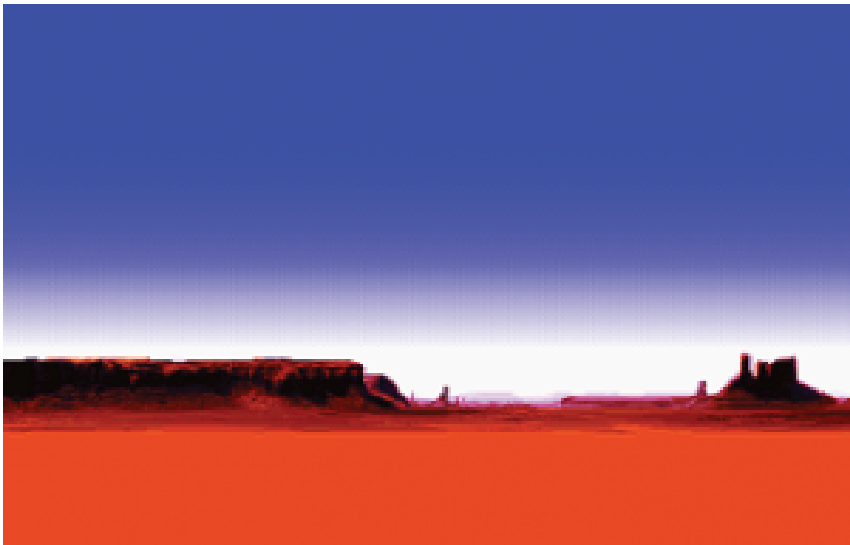
Figure 5c: NBG1
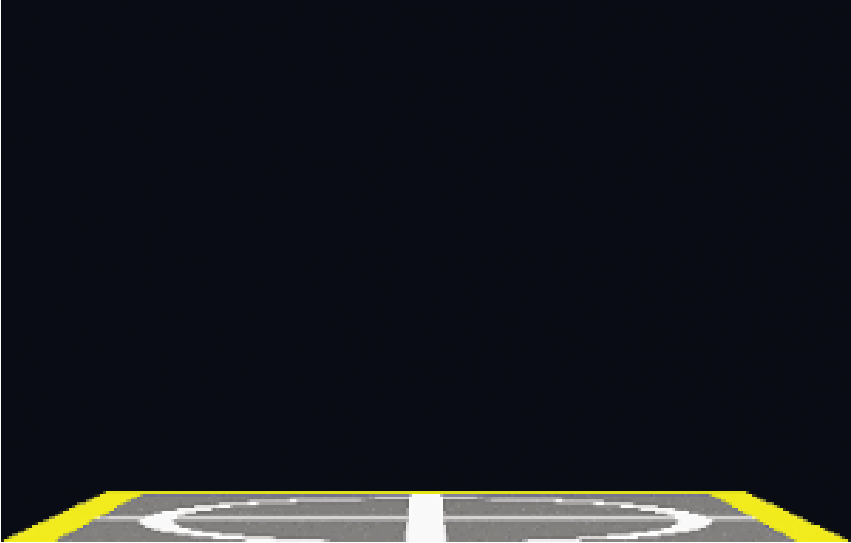
Figure 5d: RBG0 (the ring)

Figure 6: Lightning source and shadows

Figure 6b: Missing shadows on characters

*Figure 7: Texture mapping and dynamic lightning in Fighters Megamix
(Sega 1996)*

However, this technique has some trade-offs, and it was not
possible to reproduce every stage of the arcade version faithfully.
For example, in the first stage of the game a road is present in the

background. In the console version, the lines that form the road are not dynamically updated according to the rules of perspective when the camera moves, while in the arcade version they are correctly distorted to create a vanishing point (Figures 10a and 10b). The third stage was also heavily reworked in the Saturn version. In the arcade version of the game, this stage was designed as a graphical showcase, with the two opponents fighting on a raft floating on a river passing under huge, fully 3D-modelled bridges, that project their shadows on the fighters (Figure 11a). Since it was not possible to recreate the bridges with 2D elements, the entire stage had to be redesigned. The Saturn version of stage 3 is very similar to all other stages, with a static ring placed on the bank of a river (Figure 11b).
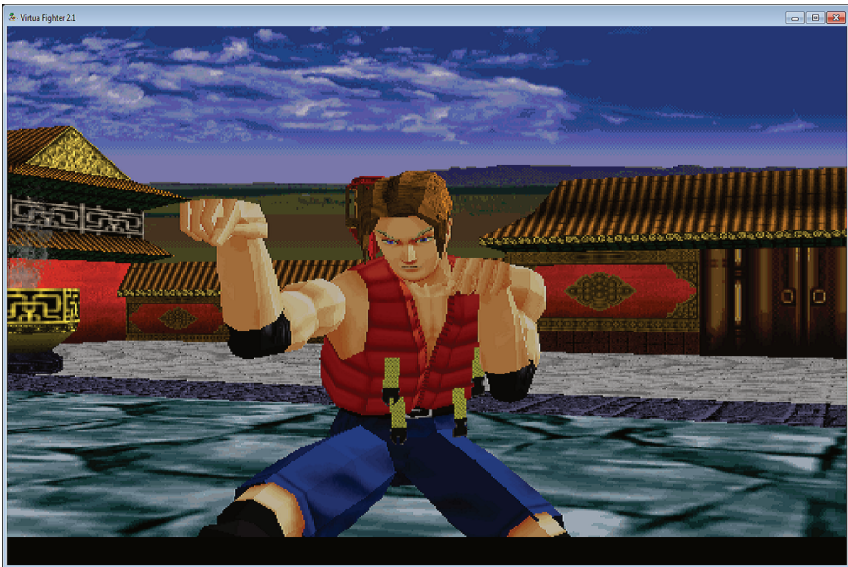
Figure 8a: Shadows in Virtua Fighter 2 on the Model2 arcade version.

Figure 8b: Shadows are not present in the Saturn porting of Virtua Fighter 2

Figure 9a: Virtua Fighter 2 on Sega Saturn
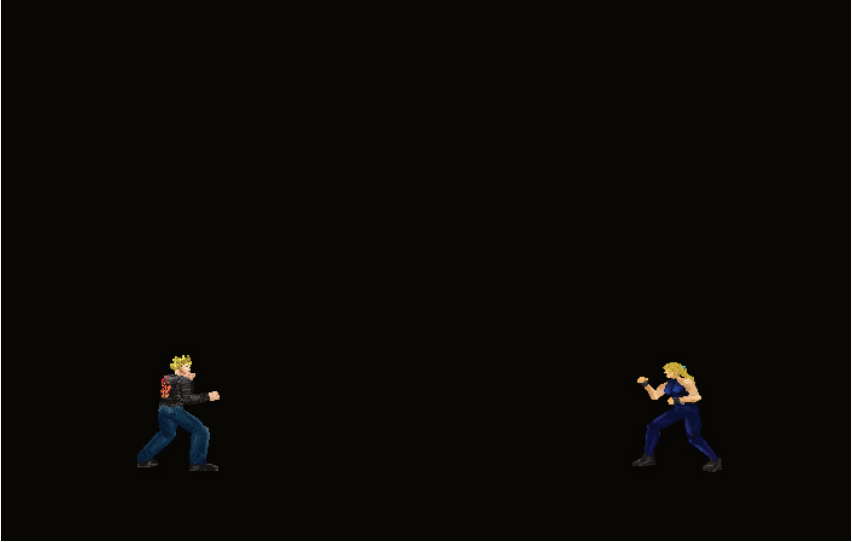
Figure9b: VDP1 framebuffer

Figure 9c: NBG0
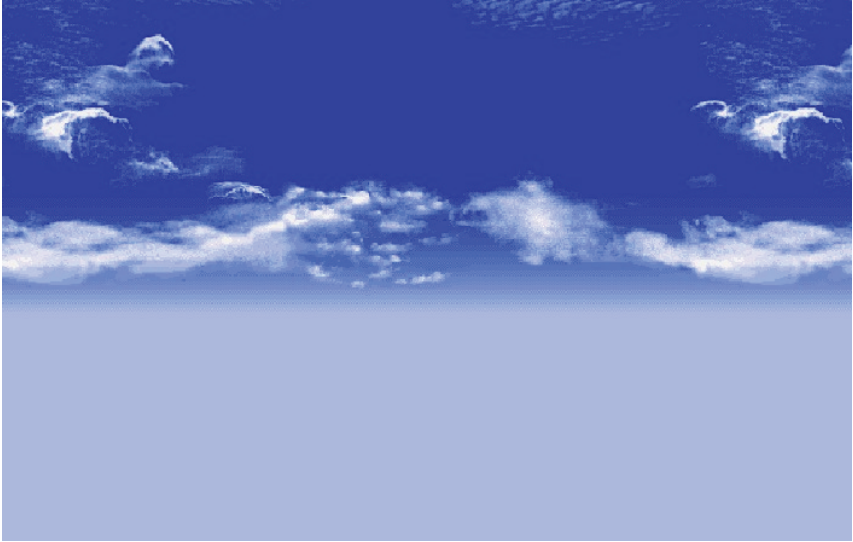
Figure9d: NBG1

Figure 9e: NBG2
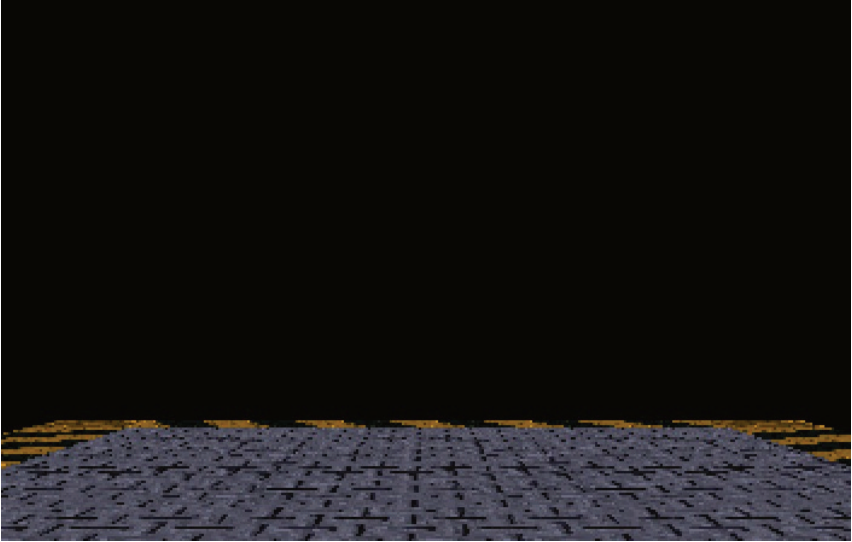
Figure 9f: RBG0

Figure 10a: Virtua Fighter 2, Model 2 version (SEGA Model 2 Emulator v.1.1a, ElSemi, 2014). The road in the background has a vanishing point and is drawn accordingly.

Figure 10b: Virtua Fighter 2, Saturn version. The road is just shifted to the left and is not drawn according to linear projection rules.

Figure 11a: Virtua Fighter 2, Model 2 version (SEGA Model 2 Emulator v.1.1a, ElSemi, 2014). The bridge is 3D modeled and shadows the ring.

Figure 11b: Virtua Fighter 2, Saturn version. The bridge is not present in stage 3, however the water of the river is animated.

In conclusion, being a machine designed to handle 2D graphics, the Saturn's developers struggled at first to reproduce 3D graphics. The proper usage of the VDP2 and the several background layers that were available to the Saturn were the keys to achieve the maximum performance from the system. It was especially important to design 2D elements in a way that could give the illusion of a 3D space. Furthermore, the release of the Saturn Graphics Library allowed programmers to more easily access all of the Saturn's hardware resources, and the more faithful port of *Virtua Fighter 2* compared to the first release of the series stands as proof of this improvement.

Figure 12: Mesh effect in Saturn games left, Nights Into Dreams… (Sega 1996); right, Thunder Force V (Technosoft 1997)

THE HALF-TRANSPARENT EFFECT

In computer graphics, half-transparency is a technique used to blend the colours of two overlapping pixels so that one of them appears to be transparent or translucent. This technique is widely used to simulate water, flames and smoke in games. One of the most controversial aspects of the Saturn hardware architecture lies in whether or not it was capable of drawing half-transparent pixels on the screen. This subject was one of the most debated during the console's life-cycle, and, despite it not being the object of this research, I think it is important to shed some light on this aspect, at least from a technical point of view. At the centre of the debate was the highly controversial "checkered" effect that is used in most Saturn games to provide computationally lightweight half-transparency (Figure 12). According to Sega's official documentation, a "mesh"5 is a sprite in which only every alternate diagonal of pixels is drawn (Figure 13). Mesh sprites show a typical checkered pattern in which, given a scanline, either odd or even pixels are drawn, while the rest are left fully transparent (invisible or completely see-through). Even though, both from a programming and a hardware resource point of view, using a mesh is a cheap and easy way to deliver a semi-transparent effect, its visual quality cannot match a standard half-transparency, in which the colour of every overlapping pixel is averaged with the background. Sega's competitor consoles6 were considered superior in this regard, since they were able to draw half-

transparent polygons in a consistent way, without the need to rely on visual tricks. As a matter of fact, it is actually possible to produce a regular half-transparent effect even on the Saturn, as shown in Figure 14. Nevertheless, despite the Saturn being able to draw half-transparencies, many games still rely on the checkered effect. In order to discuss the reason behind this practice, I need to briefly explain some specific features of the Saturn hardware architecture and its 2D/3D dual nature.
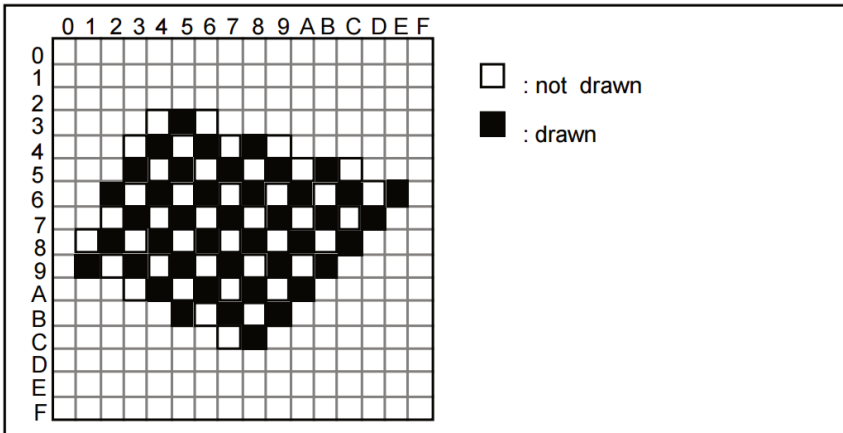
Figure 13: Mesh pattern (Sega of America, 1994c)

Figure 14: The water is half-transparent and the monster can be seen through its surface Panzer Dragoon 2 Zwei (Sega 1996).

According to Sega's official documentation, the VDP1 is in charge of the half-transparencies of sprites placed on top of other sprites, while the VDP2 has to deal with the half-transparencies between sprites and backgrounds. However, the VDP1 can handle the half-transparent effect only on pixels stored in its framebuffer in RGB

colour mode, since it needs the actual colour information to perform the requested calculation, i.e. a colour average between the pixel already drawn in the framebuffer and the pixel that is about to be plotted. Despite the VDP2 being technically able to perform the half-transparency, regardless of the colour mode in use, this is not feasible in practice. The VDP2 does not store any sprite information, since it only deals with background layers, and, indeed, it sees the VDP1's framebuffer simply as an extra layer on top of the background images stored in its VRAM7. When a pixel descriptor, i.e. the block of memory in the framebuffer that contains the colour information of a single pixel, is set to RGB colour mode, the VDP2 can only make the entire framebuffer, meaning every single sprite, half-transparent with respect to the other background layers. This hardware constraint really limits the use of the RGB colour mode since it is unlikely to find a situation in a game where each and every sprite is rendered semi-transparent. However, RGB is not the only colour mode available to programmers of this console. Sprites can also be drawn using the palette colour mode, in which case, three out of the 16 bits of the pixel descriptor are reserved for a priority code8 and the VDP2 can be set to render half-transparent only the sprites with a priority code above or below a certain threshold. However, unfortunately, the VDP1 cannot calculate half-transparency on sprites in palette colour mode. To recap: a sprite that has to be made half-transparent on top of other sprites should be drawn in RGB colour mode with the VDP1 handling the colour calculation; a sprite that has to be rendered half-transparent on top of other background layers should instead be drawn in palette colour mode with the VDP2 handling the colour calculation. This hardware design severely limits the use of half-transparent sprites drawn on top of either sprites or background elements, and is the main reason for the widespread use of the checkered effect in Saturn games, which is an easy and computationally faster way to draw them on both.

*Figure 15: Mesh effect on a CRT TV connected through an RGB
SCART cable (top) and a composite cable (bottom).*

Figure 16a: The girl's cloak is half-transparent compared to the background.

Figure 16b: Sprites drawn behind the girl's cloak are not visible.

Furthermore, if a composite video cable, like the one included as the standard cable in the console package, is used to connect the console to a TV, the visual end result is quite similar to a true half-transparency, since an image broadcast using a composite video cable is never crisp and the pixels tend to mix their colour with adjacent ones9. Due to the analogue nature of the signal and the modulation technique used to compress the signal in one single channel10 (unlike the two channels of s-video and three channels of RGB), when the image is reconstructed on a CRT TV, it looks somewhat blurry, meaning that the colour information of a pixel is averaged with the colour information of other pixels in its proximity. The mesh effect takes advantage of the low quality of the video signal to average the colour of its checkered pattern with the background, resulting in an effect that looks very similar to half-transparency (Figure 15). It is indeed fascinating how game developers managed to use the characteristics of cables, video

signals and CRT TVs to obtain a computationally complex graphical effect, without the hardware doing any calculation at all. It could be argued that even the cable and CRT TV take part in the processing of the video output of the game console, thus extending the concept of platform way beyond the chassis of the console itself. The next paragraph illustrates some examples of typical visual artefacts present in Saturn games that make use of the half-transparent effect.

In *Guardian Heroes* (Treasure 1996) there is an example of the VDP2 half-transparent effect between a sprite and a background image. As seen in Figure 16a, the cloak of one of the game's characters is rendered half-transparent, and it is possible to see the background through it. Since a half-transparency between a background and a sprite is handled by the VDP2 and not every single sprite is made half-transparent, it is possible to infer that the cloak is rendered using a palette colour. However, when the girl's cloak is drawn on top of another sprite, since the VDP1 can handle colour calculation only for sprites in RGB colour mode, the cloak covers the sprite behind it, despite being half-transparent (Figure 16b). In this case, the developers opted to use a half-transparency instead of a mesh effect, even though the cloak could have been drawn on top of both sprites and backgrounds. It could be argued that they deemed the visual glitch caused by the overlapping of the cloak with other sprites of minor importance compared to the higher overall graphics quality of the effect. In fact, with the very fast action of the game, and with many sprites on the screen at the same time, it is rather difficult to notice the glitch during a normal play session. In the next paragraph, I will analyse another game as a further example of the limitations of the half-transparent effect of the Saturn.

Figure 17a: Objects near the horizon are drawn half-transparent with a gradient based on the distance from the camera (fade-in effect).
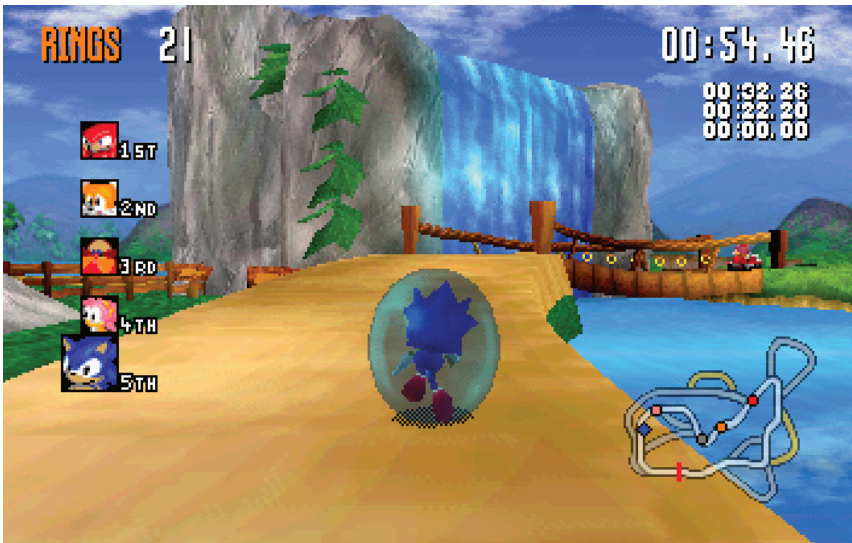
Figure 17b: The barrier is a VDP1 half-transparent effect.
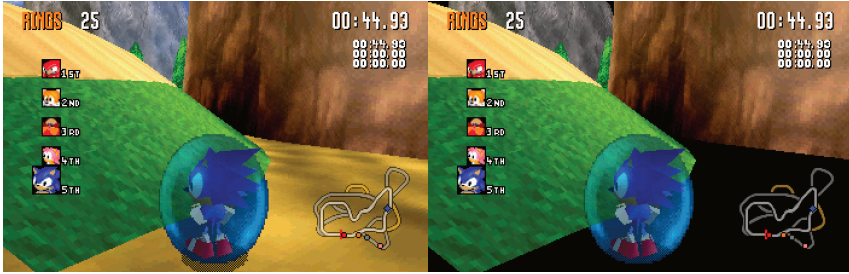
Figure 17c: The ground (RBG0) is not visible behind the barrier, despite it being half-transparent (right: RBG0 disabled).

Sonic R (Sega, 1997) is arguably one of the most graphically advanced games ever made for the Saturn. It is most famous for its fade-in effect, used to cover the pop-up of objects far away from the camera (Figure 17a). This effect is created by the capability of the VDP2 to use different blending ratios for half-transparency, enabling a sprite to gradually blend with a background. When the object reaches a certain distance from the camera, it is finally made fully opaque. However, Sonic R also contains a few examples of half-transparencies created by the VDP1, most notably the barrier power-up effect (Figure 17b). As expected, the simultaneous use of the half-transparent effect by both the VDP1 and the VDP2 can cause some visual artefacts. For example, in Figure 17c, it is possible to see how the barrier is half-transparent only when sprites, which are actually drawn by the VDP1, are behind it, and how it covers elements from the rotation background. It is possible to speculate that this is one of the main reasons why, despite the programmers demonstrated knowledge of the Saturn hardware, they still decided to use the mesh effect in order to draw the characters' shadows. Since the characters can run on parts of the track that could be made by either polygons or a rotated background, if the shadows had been drawn using the VDP1 half-transparent effect, they would have covered part of the floor when drawn on the rotation background, resulting in a fully opaque black circle. The fact that the barrier effect could have caused graphical glitches, with half-transparent polygons rendered using the VDP2, is even more evident in the last track of the game,

Radiant Emerald. In this track the fade-in effect is disabled (and the polygon pop-up effect is clearly visible) since the entire track is made permanently half-transparent to convey the idea of running on some sort of crystal material (Figure 18). Most notably, in this track there are no power-ups available, so it is not possible for the player to obtain any type of barrier. If that had been the case, the barrier would have hidden part of the track behind it. Therefore, the developers had to drop a gameplay element, the barrier power-up, in favour of an aesthetic element: rendering the entire track half-transparent.

Figure 18: In the Radiant Emerald the track is half-transparent (left). The fade-in effect is disabled (right)

This article gave a concise overview of how the half-transparent effect is implemented in the Sega Saturn console. It briefly explained how the Saturn's two custom video processors, the VDP1 and the VDP2, manage this effect, and what type of limitations and interactions they have when used together. Then, the article provided a few practical examples of half-transparencies in a few selected games, in order to give the reader a better idea of what type of visual constraints programmers, game designers and artists alike had to work with when creating games for the Sega console. It is important to point out how the Saturn hardware architecture forced programmers to rely on the mesh effect for half-transparency, both for technical and economic reasons (when a sprite has to be drawn on top of both sprites and backgrounds, the checkered effect is the fastest and cheapest method), since it is indeed possible to program true half-transparencies on the Saturn, but it requires a mastery of the hardware that not many

programmers had in the early years of the console's life-cycle. Investing resources to attain such knowledge was expensive, and it was probably not deemed viable by the investors, considering the console's limited sales figures.

CONCLUSION

In my analysis of the first three *Virtua Fighter* games, I illustrated how the hardware could limit and define the approach that designers, artists and programmers had to take in order to represent a 3D space in Saturn games. Since the Saturn could not faithfully reproduce the graphics of the original arcade games, programmers and artists had to rely on the parallax effect and on the rotation and scaling of backgrounds to visually simulate a 3D space around the game's characters. Another element that came to light is how programmers had to forgo dynamic lighting, adopted in *Virtua Fighter*, in favour of texture mapping, when porting *Virtua Fighter Remix* and *Virtua Fighter 2*. As previously pointed out, it could be expected that the trajectory of a technological innovation would always move up and forward, but instead, with regard to the Saturn, two different directions have been taken: dynamic lighting and texture mapping. Eventually, those two techniques were finally used together in the second half of the console's life-cycle, when programmers mastered the hardware and were able to simultaneously use both techniques in the same game.

Another typical aspect of the Saturn hardware is that the game's graphics do not always appear as the developers intended. For example, it is not enough for a developer to simply set a sprite to be half-transparent: depending on the colour mode and the position of the sprite (on top of another sprite or a background), the final rendering could be very different, ranging from a proper half-transparency to a part of the image mysteriously disappearing. Also, the type of cable used to connect the platform to the TV contributes to the final image rendering, sometimes even with a positive outcome, as is the case of the half-transparency created by

the mesh effect when using a composite video cable and a CRT TV.

Finally, the Saturn hardware can, in particular occurrences, limit the game design space in unexpected ways, as seen in *Sonic R*: due to a hardware limitation, power-ups could not be placed in the last track of the game in order to avoid a graphical glitch. However, it could be argued that platform limitations can be an incentive for developers to be creative, challenging them to overcome such constraints in order to maximise the capability of a given platform.

APPENDIX: SEGA SATURN BIBLIOGRAPHIC DESCRIPTIONS

In I AM ERROR, Altice points out how bibliographic descriptions are an underrated subject in game studies, whether it be in books or articles. Although addressing the lack of well-defined norms for citing videogames in literature is not within the scope of his work, in his book he introduces two different bibliographic formats for videogame sources: one for physical objects (e.g. cartridges, disks) and another for files used in an emulated context (e.g. ROMs, save files). Furthermore, he also explains how "rich bibliographic records necessarily require a baseline technical understanding of the objects they describe" (Altice, 2015, p. 336), meaning that choosing which fields are used to describe the object under investigation is both strictly connected to the technical features of the object itself and to the writers' understanding of such technical features. Consequently, a bibliographic format for a specific platform might not be suitable to describe a videogame designed for a different one. Altice rightly points out how a "bibliographic description that suits a Famicom cartridge will not necessarily suit a ColecoVision cartridge" (ibid.). In light of this consideration, for this paper, I am going to use two modified versions of the bibliographic formats used by Altice for the NES platform; one for physical sources and one for emulated sources. Such formats were

modified to take into account the specific technical features of the Saturn as a platform.

Format 1: Enumerative type for citing Saturn-compatible CD-ROMs and cartridges. *Title*. TV format [Region], Catalog ID, Media [Disc size]. Developer {Credits}: Publisher, Release date.

Format 2: Enumerative type for citing Saturn-compatible disc images/patches/save states used in emulation.

Original CD-ROM title [Type]. Author. "Filename and extension" (File size). Image type {audio subchannels file}. Date modified. Emulator [Virtual Disc Drive] {Optional cartridge}, BIOS version. <Download source>

The Catalog ID is an alphanumeric string usually present on the CD cover and sometimes also in the booklet or on the CD case, and is used to identify the revision of the game. The Virtual Disc Drive is an optional field to specify which software was used to emulate the CD-ROM disc drive, in case the emulator used requires it to read CD-ROM images. Finally, an emulator might require a BIOS file to run, so another field was added to specify which version is used. The above formats are just suggestions of what a possible model for a Saturn bibliographic description could be like. Since a bibliographic record depends on the technical understanding of the object of study, the above formats are very likely to be expanded and revised as the knowledge of the object under scrutiny deepens.

ENDNOTES

1. For example, the previous year Sega released its first 3D racing simulator: *Virtua Racing*.

2. In this paper, I consider the term sprite and polygon as equivalent.

3. In order to use the colour calculation feature of the VDP1 (Gouraud shading, half-luminance, half-

shadowing, etc.) the information regarding each pixel in the framebuffer is saved as a 16-bit block of memory and the most significant bit (MSB) specifies whether the colour calculation is on (MSB=1) or off (MSB=0). When the screen resolution is set to high definition, the information per pixel in the framebuffer is reduced to 8 bits to store twice as many pixels (only the horizontal resolution is doubled in high definition mode). However, each bit is used to represent a colour code and the information regarding the colour calculation is lost.

4. It is worth noting that *Virtua Fighter Remix* was ported to the Sega ST-V arcade board after the release of *Virtua Fighter 2*.

5. Nowadays, in computer graphics, a "mesh" is a solid made of polygons.

6. The Sony PlayStation and the Nintendo 64.

7. It is important to point out that the VDP2 is in charge of composing the final image (framebuffer and background layers), and sends it to the RGB encoder.

8. The priority code is used, among other things, to determine which sprites are in front or behind each background layer.

9. This image artefact is called pixel bleeding effect.

10. The luminance signal (black and white values) and the chrominance (saturation and hue information) travel on the same channel, using a frequency-division modulation.

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2.

Mafia and the representation of Italians

Giulio Pitroso

ABSTRACT

This study analyses the representation of Italians and the Mafia
in video games. It analyses games of different genres with Italian
organized crime as the main theme: they differ in terms of
gameplay and narrative, though they all have important features in
common. The study compares movies about organized crime and
video games, in order to understand the relation between themes
and genres in these two media. Furthermore, the paper examines
both narrative aspects and game design, and is intended to raise
questions concerning the genre of Mafia games. It also analyzes
the role of Italian ethnic background, as well as the role played
by gender and sexual orientation, and relates those elements to

the values commonly associated with the Italian Mafia. Finally, the study highlights how games represent more general stereotypes that are associated with Italian culture, such as the consumption habits of food and music. The methods of this research are based on semiotic analysis, sociolinguistics and Cultural Studies.

INTRODUCTION: MAFIA and the video games

Mafia games: goals, problems, and methods

This essay analyzes a selection of video games that have the Italian Mafia as their main theme. While different types of 'mafia' have been present in various geographical and historical contexts, the 'Italian Mafia' refers to the criminal organization that is characterized by its historical, cultural and political connections to the Italian Republic. As such, this study excludes other criminal organizations that are referred to as 'Mafia', and have goals, strategies or internal structures that resemble those of their Italian counterparts, but have participants that are not of Italian descent. The study aims to identify the common characteristics of these games, and to provide the means to understand the representation of Mafia(s) through this medium. The paper examines both narrative aspects and game design, focusing on how the Mafia is represented within different genres (i.e. strategic games, RPG, etc.). Looking at the narrative of the games, the paper analyzes the sociolinguistic mechanisms involved in the representation of the characters' Italian ethnic background, as well as the role played by gender and sexual orientation, and evaluates how these features can be seen to replicate or challenge pre-existing values and beliefs commonly associated with the Italian Mafia. Finally, the study highlights how games represent more general stereotypes that are

associated with Italian culture, such as habits of food consumption and music preferences.

The investigation starts with The Godfather (US Gold, 1991), the earliest representative of the genre. I decided to begin with this text because it is the first to contain clear references to the world of Italian organized crime. It is also explicitly inspired by the world of cinema. Indeed, its importance is tied to the centrality of Coppola's saga in the history of cinema. These movies played an important role, as we shall see, both in the history of the Cosa Nostra and in creating narrative models and stereotypes about it. The essay draws on articles and texts that have analyzed the representation of Mafia in both film and television, and compares the key characteristics of these forms of representation with what is visible in video games.

The ultimate goal of this study is to raise questions concerning the construction and cataloging of a genre. For this reason, it mixes taxonomic methods and textual criticism, and is intended as a first step towards a more structured study. Moreover, the analysis encourages a study of the reception of these cultural products, for two key reasons. First, Mafia is inevitably linked with political problems and contexts. Cultural products that do not explicitly condemn this type of criminal organization might risk legitimizing them. Second, games and other types of texts about, or incorporating, Mafia organizations might have a direct influence on those players who experience these forms of crime in their daily lives, as they might consider becoming part of them if these are not only normalized, but also made attractive by cultural products.

In carrying out this study, I conducted research on Moby Games, YouTube and Steam, using keywords such as 'Mafia', 'mobster', 'gangster', 'criminal organization', etc. I found several games involving Mafia. I then selected only those games that included the Italian Mafia in their thematic and substantive content. I played the identified games either on Steam or via a free internet download. Some of these games were unavailable, so I decided to watch them

on YouTube. Research and analysis were undertaken of those titles relevant to the themes of this paper: they will be mentioned in this study. The study also draws on the author's own knowledge and experience.

The Godfather, an archetypal model

The strongest stereotype through which Italians have been represented is probably the one tied to the Mafia. This ominous link has its roots in the representations of Italian-Americans that were popularized in Hollywood films, especially since the 1930s era of gangster movies. It created an inseparable bond between white ethnicity and organized crime, according to a discriminatory scheme that had already been applied to other social groups, albeit with different fields of afference. As noted by Cortés (1987, pp. 109-111), the film industry gave to Chinese, Irish, and especially Italians the role of gangsters, but it had already created recurring associations between ethnicity and role that were equally discriminatory, such as Mexican bandits, bloodthirsty natives, and savage and uninhibited African-Americans (this question will be taken up in the section titled 'Gangster or Mafioso?'). The gangster film played a particularly important role in describing the internal contradictions of the 'American Dream' and the conflicts between an open society and capitalism, as evidenced by the famous work of Robert Warshow (Shapiro, 1993, p. 731). The gangster movie shed light on the dilemma between ruthless individualism and the risks attached to this (Bernardelli, 2016, p. 11), and even the conflict between the ethics of rural society (code of honor, importance of family, monoculturalism, etc.) and those of modern society (personal success as the principal aim of the individual, diminution of collective interests, etc.). The role played by Italian minorities therefore represented an internal threat to American society, more shocking and dangerous than those performed by other groups. This is important, because in all video games about the Mafia, we can find a reference to a clash between different systems of ethics. As we will see later, this situation was revolutionized by The Godfather (Coppola, 1972), which replaced

instances of archaic society and pre-urban ethics with the rules of the Mafia and of the ethnic group, always at odds with the heartless reasons of business. In addition, Cortés also notes how the Mafia movie is intended to reflect the broader concerns of all Americans: 'Coppola used the Mafia as a metaphor for the American quest for wealth and power, in which the Mafia symbolizes the successes and excesses of American big business' (1987, p. 118).

Coppola's saga enjoyed an incredible level of success, and had a significant impact on the collective imagination. The success of the film is linked to two problems in representing the Mafia: on the one hand, the criminalization of an ethnic group, and on the other, the risk of giving legitimacy to a dangerous organization. The first problem is linked to the so-called 'marketing of ethnicity' by Hollywood between 1970 and 1988, which gave new dignity to groups that had previously been discriminated against on the screen, and it allowed Italian-Americans to take a leadership role in the system of production in creative industries (Cortés, 1987, p. 116). Ethnicity also became a marketing tool, and public interest in the topic grew. However, in the US, it became commonplace to associate Italian origins with connections to the Mafia. Moreover, as noted by Cortés, from that point onwards, the Italian or Italian-American characters whose ethnic origin was not relevant to the plot were often portrayed as gangsters. The Godfather – and subsequent movies that exploited its success – provoked mixed reactions throughout American society: they created a cultural phenomenon, as set out in a successful book, namely The Godfather Effect (Santopietro, 2012). On the one hand, as Santopietro writes, Italian-Americans happened to appear more civilized and more humane, and young people with non-American origins were moved to get in touch with their roots. On the other hand, it consolidated a stereotype. Much of the literature on Coppola's saga focuses on the humanization of mobsters, and how the titular character appears as a good family man. The 'family' is also the name of a hierarchical system, headed by a don, or godfather, who derives his authority from his wisdom and his respect for his subordinates. This is something of a novelty, if

we compare it to the socially dangerous outcast protagonist of gangster movies (Cawelti, 1975, pp. 339-340). The Mafia is represented as an organization dominated by strict rules. Those secret rules were discovered thanks to the revelations of Valachi, the informer and protagonist of The Valachi Papers (Young, 1972). Coppola's Mafiosi are seeking their identity, while encountering and attempting to navigate the stark contrast between the needs of the business and those of an ancient, almost feudal, code of honor. We must also note that the Mafia is a deeply rural phenomenon (Dalla Chiesa, 2015). Vito Corleone fights against the introduction of drug trafficking in New York, because he deems it a threat to the respectability of the Mafia among both the Italian community and his allies who have political power. Michael Corleone tries to strike a balance between his process of cultural assimilation into American society and his role as capofamiglia, trying disastrously to become an honest entrepreneur. The tragic position of Corleone is no longer that of the classic gangster who pursues success at all costs: they must choose between free market society and the traditions of the ethnic group, reconsidering their role within the Italian community.

The Godfather film also had a relationship of mutual influence with the real-life Cosa Nostra and indeed prompted protests from some Italian-Americans. In particular, the Association of Italian-American Civil Rights League staged vigorous protests, until its leader, Joseph Colombo, made a deal with the production company. Colombo was a member of one of the 'Five Families' and established an agreement that the film would make no mention of the word 'Mafia' (Rossen, 2017). This is an important point, because, as we will see later, similar controversies have also accompanied the release of video games about the Mafia. In essence, The Godfather marked a pivotal point in the history of representation in this regard, providing the main template for Mafia games.

Mafia and video games

The video game industry started releasing games about the Italian Mob in the 1990s. *The Godfather* (US Gold, 1991) – playable on Amiga, MS-DOS, Atari ST – is the most famous example. As an archetypal model in this genre, we will analyze the game below. There were several earlier games that referred to the Mafia or to the gangster film. Most of these do not have a criminal as the principal character: mobsters are the enemy. For this reason, they do not fulfill our definition of Mafia games. Here is a short list of examples:

Video game	Kind of criminals	Why it is not a Mafia game	Year
Hogan's Alley	Fake, cardboard gangsters are targets for shooting practice. They recall classic gangster movies	The lead character is an FBI agent	1984
Chicago 1931	Reference to gangster movie	The lead character is an FBI agent	1986
Gumshoe	King Dom is a Mafia Boss	The settings are surreal, with fantastical elements and the *mob boss* is not Italian. The lead character is a private eye	1986
La Cosa Nostra	Our enemies are imaginary members of the *Chicago Outfit*	The lead character is a private eye	1986
Dead Angle	Reference to gangster movie	The lead character is a young man whose girlfriend has been kidnapped by the Mob	1988

Unlike these games, *The Godfather* has a series of elements that characterize it as a prototype of the *Mafia game*:

1) The moral dilemma linked to the code of honor: when the player kills civilians (three times) – in our gaming experience – he will be disowned by the family and the game will end.

2) The settings: the places described are related to those of Coppola's saga (New York, Las Vegas and La Havana) and other places inspired by the films. They reveal that the predominant point of view is that of the Mafia in North America and Sicily.

3) The narrative structure refers to a social tradition and it is strongly tied to the history: the game opens with an introduction explaining the existence of the Five Families, and each level is associated with one year (1946, 1957, 1961, 1975, 1981). The Mafia families are considered as social groups that evolve over time.

4) The role of the anti-hero: the criminal we control acts against the law.

5) Corrupt law enforcement: in all levels, there are policemen whose role is to stand by and watch our crimes and eventually be killed. This detail emphasizes the existence of a gray area, referring to the relationship between the Mafia and political power.

During the game, there are also some frames visible from movies with Al Pacino playing Michael Corleone. In fact, when the game was released, the creative and commercial process around video games was asymmetrically dependent on movies: for the most part, games were adapted from, and playable versions of, successful works from the silver screen. As Alexis Blanchet has noted, there were two ways to undertake this adaptation: one, a *multigenre* approach, in which there were several ways to interact – e.g. puzzles, driving simulation, etc. – with the gameplay; and two, a *monogenre* approach (2008, p. 47). The latter option was more related to the plot of the movie, as in *The Godfather*. The game combines first- and third-person shooting. Hence, looking at the relation between media, we can recognize in *The Godfather*

some interesting elements, which signal the *interface* between the Italian Mafia and video games: the significant role played by movies, and the reworking process that served to narrate the Mob within a new medium.

The Mafia game

In relation to the games mentioned above, we can cite two titles in order to foster a more complex discourse. There are two video games – *The King of Chicago* (Mindscape/Cinemaware, 1987) and *Mafia* (Igelsoft, 1986) – set in Chicago with a gangster as the protagonist. The first combines a rudimentary graphic novel and first-person shooting, with multiple choice dialogs: we can perform criminal actions and build an empire, taking advantage of the chaos facilitated by the arrest of Al Capone. Yet, the very story of the game poses problems in recognizing the importance of the authority of the Mafia system, and our protagonist, Pinky Callahan, is not Italian. Even if corruption does arise, and some protagonists are of Italian origin, the lack of a code of honor means that it is not, strictly speaking, a *Mafia game*. Even *Mafia,* which is more focused on gang management and profits, is not a *Mafia game*: it presents almost anonymous protagonists, the Mafia rules are almost absent, and the hierarchical system within the gang is weak. The strategic map of the city allows us to choose a scenario (e.g. robbery, fights, etc.) to play out, or to start a textual adventure. Nevertheless, the story has minimal internal coherence. For example, we can be pickpockets on the metro one minute, and storming an armored car the next: real Mafiosi do not behave like pickpockets. In essence, the social culture of the Mafia is absent in both of these games.

The Italian Mafia has its own mythology and ideology, which have been studied since the Mob started to become a social and political problem. It is a complex phenomenon that has provoked much dialog within cinema and television. This dialog has had unexpected effects. For instance, it has been observed that *The Godfather* had an impact on the behavior of real gangsters of

Italian origin in the United States (Adler, 2006), who started to imitate the characters of the movies. The history of the Mafia is bound up with the conditions of Southern Italy, which became the central pillar of the so-called 'southern question' a few years after the country's unification. Whilst the North was developing infrastructures and systems of production, the South remained a largely backward, agriculture-driven society in which the social texture was significantly different. The ancient and almost tribal code of honor that inspired gangsters was born there and had an influence among Italian communities abroad, since the south contributed substantially to the Italian diaspora (Coppola, 1997, pp. 150-160), and – as will be explained below – to the creation of the Italian Mob's international network, including multiple countries such as Argentina, Australia, Canada, Japan and the United States. Furthermore, all the original criminal organizations that today we call Mafias have their origins in Southern Italy: the Cosa Nostra in Sicily; the Camorra in Naples; the 'Ndrangheta in Calabria. Whilst the first is well known, the others have only been represented in literature, film and TV in the past decade or so, following the success of *Gomorrah* (Sorrentino, 2008). Nevertheless, the Sicilian Mafia has always had a hegemonic role in representing the Italian Mafia (Santino, 2014).

In the field of video games, most titles about the Italian Mob are centered on 'This Thing of Ours' (American) and 'Cosa Nostra' (Sicilian). Moreover, the games that feature Italian organized crime as a secondary element of the story follow the same model. When there is no visible explanation of the ties to Italy, they appear throughout Italian culture – food, music, habits, and moral code – non-verbal communication and languages – Sicilian, Italian-American or Italian – and the names of people or places, which clearly have Italian origins. These are intended to convey the characters and the social texture related to them. We could also have included in this study games that depict Cosa Nostra models and behavior elsewhere, such as *Scarface: The World Is Yours* (Radical Entertainment, 2006), and explore this mafia-related cultural zone of approximation. It would probably prompt us to

discover the effects of the influence of this cultural model upon other kind of games – e.g. in fantasy ones, where it is possible to frighten gamers so as to create racket systems, or in open world games where players set up illegal smuggling. Unfortunately, we can only suggest that these and other interesting game playing practices are inspired by 'pure' Italian Mob titles.

Company	Video game	Type of Italian Mob	Where the game is set	Year
Rockstar Games (USA)	Grand Theft Auto III	Leone crime family* (This Thing of Ours)	Liberty City*	2001
Eidos Interactive (UK)	Gangsters 2: Vendetta	Reference to the National Crime Syndicate and Chicago Outfit, gangs of mixed origins	New Temperance*	2001
Electronic Arts	The Godfather	The Five Families (with false names as in the movie)	New York	2006
2K Games (USA)	Mafia II	Sicilian Mafia, This Thing of Ours	Sicily, Empire Bay*	2010
Kalypso Media (DE), FX Interactive (ES)	Omerta: The City of Gangsters	National Crime Syndicate, gangs of mixed origins, Sicilian Mafia	Atlantic City, Japan (in the Japanese Incentive DLC)	2013

*Table 1: This table shows some of the most important examples of mafia games. The names of the organizations and places with * do not exist.*

In Table 1, we can observe the ethnic origins of video game gangsters. At a glance, one can speculate about the connections between the Italian Mob and its Sicilian origins. It seems that the only Italian Mafia is Cosa Nostra and that the American-Italian one is a direct expression of the migration process from Sicily. Figure 1, taken from *Mafia II*, better explains this point. Here, the *wiseguy* Jimmy looks at the Sicilian flag, in an American-Italian bar. Throughout all of the adventures of *Mafia II*, the Italian flag

is prominent on the walls or above shop doors, as a symbol of an immigrant community. Nevertheless, only at a Mob meeting point do we find a clear sign of the Sicilian identity. Furthermore, a chapter of the game is set in Sicily: Sicilian-speaking rebels rise up against fascists, aided and managed by an important boss, clearly inspired by Calogero Vizzini. In *Mafia II* it is also possible to read the following loading quote: 'A man must be able to claim Sicilian or Italian descent to become a member of the American Mafia. Non-Italians are often associated with the Mafia, but can never join the organization itself'. There is a clear distinction between Italy and Sicily, which is historically based, since Sicily aspired to be independent in the late '40s (Nicolosi, 1981) and its identity has been a matter of public debate in Italy. Nevertheless, Italy is made up of four other autonomous regions, each with strong local identities, and, beyond three traditional mafias, there were (and remain) other criminal organizations. One should add that the Italian Mafia, as mentioned before, is spread across several countries, as an effect of the Italian diaspora. There is, for example, an Argentinian-Italian Mob (Aguirre, 2000); there are sections of the Calabrian 'Ndrangheta in Canada and Australia; and the Italian Mafia is even present in the UK. These groups have been depicted, respectively, in the TV series *Hombres de honor* (Polka, Argentina, 2005), *Bad Blood* (City, 2017–ongoing, Canada), *Peaky Blinders* (BBC Two, 2013–ongoing, UK), and *Underbelly Files: Infiltration* (Nine Network, 2011, Australia). The TV series *Gomorrah* (Sky Atlantic, 2013–ongoing, Italy) enjoyed international success: it is based on the tragic lives of the Neapolitan Camorra's mobsters. Hence, we can assume that this Sicilian-American hegemony is the result of the American point of view that dominates almost all of the games, and *The Godfather* model as the first archetype of a Mafia game.

Figure 1: Jimmy, the lead character of Jimmy's Vendetta, an expansion of Mafia II, looking at the Sicilian flag in a bar owned by the Mafia.

In order to evaluate this argument, we might consider that the aforementioned games are set in New York, Atlantic City and fictional places that recall famous American cities. New Temperance State resembles the Lake Michigan area, while Liberty City and Empire Bay are New York. The same geographical discourse should be made about other titles: New Temperance is also the set of *Gangsters: Organized Crime* (Eidos Interactive, 1998), which is the previous chapter of *Gangsters 2*, while Vice City of *Grand Theft Auto: Vice City* (Rockstar Games, 2002) resembles Miami. Sicily is always seen from the American perspective: in *Omerta* our character comes from Sicily to pursue the American dream; Vito Scaletta lives out his adventures as an American soldier in Sicily; Massimo Torini comes from Sicily to Liberty City with a secret plan to enable Sicilians to rule in America in *Grand Theft Auto: Liberty City Stories* (Rockstar Games, 2006).

By contrast, Italian creative industries – TV and cinema, above all – are always called upon to respond to the critical debate around this theme. Such discourse includes video games as well. As a result, it is not unusual to see political campaigns against

them: in this regard, we might cite the deputy of Sicilian Regional Parliament Cracolici who tried to block the release of *Mafia II* in Italy, so as to avoid 'l'equazione Sicilia-uguale-mafia' ('the equation that Sicily equals mafia'). The same game was also accused of racism by the Italo-American Association, while the Italian MEP Sonia Alfano demanded that it be blocked. On the first accusation, Take-Two responded by saying that the company had the objective of distinguishing the artistic expression from the gratuitous use of violence and stereotypes (Purchese, 2010). As to the second charge, 2k Games replied: '*Mafia II* tells a compelling story about organized crime in America – a subject that for decades has been featured in award-winning movies, television shows and novels such as The Godfather and The Sopranos' (Dutton, 2010). This discourse is analogous to the reception of other cultural products related to the Mafia, especially when they come from the other side of the Atlantic. This was the case with the television series *The Sopranos* (1999–2007), of which, on Columbus Day 2004, the then-President of the Chamber Gianfranco Fini said: 'Italian Americans are a positive force and no television series can erase it' (Longo, 2004).

The cultural conflict around this topic has likely contributed to the dearth of Italian video game productions that make use of the Mafia. However, we should also note two hidden references to the Mafia in Italian video games: *Wheels of Aurelia* (Santa Ragione, 2016) and *Memory Reloaded* (La Molleindustria, 2004). The first is related to a quote from Pasolini, while the second refers to the memory card of the corrupted 'First Republic'. Hence, to even speak about this argument in a non-pedagogical way seems to be difficult in the Italian context.

TOOLS FOR UNDERSTANDING MAFIA IN VIDEO GAMES

Convergence Culture and the representation of Mafiosi

Our starting point in this section is Henry Jenkins' *Convergence Culture* (2006). In the chapter entitled 'Searching for the Origami Unicorn: *The Matrix* and transmedia storytelling', dedicated to *The Matrix*, Jenkins sets out how video games, movies and cartoons interact to create a form of transmedia narration. Some missions from *Enter the Matrix* (Shiny Entertainment, 2003) reveal parts of the story that are not present in the film, and yet they remain coherent with it. Even the archetype of Mafia games is based on a famous series of films, but in the first *The Godfather* game we are only able to live out the adventures of a gangster in the places established by the movies. In the 2006 version, our principal character is Aldo Trapani, who does not appear in the films: his missions disclose parts of the story that we could only have imagined. For example, Aldo must deliver the head of the horse, Khartoum, to the bed of the Hollywood producer, Woltz.

Nevertheless, the relation of continuity between video games and movies, and the expansion of the story, has to be seen in relation to other important aspects, one of which is *legitimacy*. Famous actors voiced the characters they had originally portrayed in the movies, giving legitimacy to the game: a key exception in this regard is that of Al Pacino, who instead chose to play Tony Montana in *Scarface*. While the Wachowskis had the opportunity to set up a collaborative writing network, instead of a synergic action (2006, p. 99), *The Godfather* had to deal with two obstacles. The games were released decades after the movies, at which point it would have been impossible to imitate Wachowskis' process, that is, creating the expansive universe of *The Matrix*, as it was an ongoing process. Furthermore, Coppola was openly opposed to the video game, stating: 'I had absolutely nothing to do with the game and I disapprove. I think it's a misuse of film'. There are also notable market-driven processes at work in the adaptation of movies and TV series for other media that differed from those of

The Matrix: in the latter case, they had the aim of anticipating the development of the plot or connecting sequels to previous movies. Jenkins notes that not only did they have a working peer-to-peer network, but they also took part in the mixed media strategy, which generated flexible characters tied to what he calls the *franchise* (2006, p. 105). Nevertheless, this is not the case with *The Godfather*. Once Coppola's filmic trilogy had come to an end, it was quite unlikely that the video games could prompt or contribute to the release of a new chapter of his work. Producers propose a reading pathway that begins with the book, passes through the movie, and arrives at the video game (Davis, 2008, p. 240). This process follows the chronological order of the creation of the works attached to the same story. Davis notes that in the first passage, the story undergoes narrative compression, while in the second, it is given a narrative expansion. Nevertheless, we know of a few games that have partly inspired movies, even some involving the Italian Mob: this is the case with *Hitman 2: Silent Assassin* (Eidos Interactive, 2002) and the films *Hitman* (2007, France, USA, UK) and *Hitman: Agent 47* (2015, USA). In the game, the *famiglia* Giulianis kidnap the mentor of the principal character, the Sicilian priest Vittorio, while the story of the films is different and does not include this character. In any event, the debate over the relations between cinema, TV series and video games is not our chief focus here; we merely have to acknowledge some key elements before proceeding any further. We would agree with the following claim: 'we realize that films do not serve as models for games, but provide a set of necessary viewing space techniques that the video game takes and adapts to its own needs' (Perron and Arnault, 2015). Nevertheless, the mafia movies/mafia games relation is asymmetric: the role played by the silver screen is still dominant in the making of video games, and, hence, in the depiction of Italian mobsters. However, we will show below how a specific group of games is reframing the representation of the Mafia.

Gameplay

In terms of gameplay analysis, the Mafia games are a mixture of several genres. The most famous examples are clearly derivatives of GTA III, which was 'strongly influenced by the gangster-movie' (Blanchet, 2008): the Mafia and The Godfather series are a combination of racing, shooter and beat 'em up games. Strategic and management games – like the Gangster series and Omerta – are based on point and click interaction: they are usually RTS games, like the multiplayer casual games adapting the spirit of mobster capitalism to a mobile device, Mafia Wars (Zynga, 2009) or Mob Wars (Maestri, 2008). All of these games have two key aspects in common: they have a strong predisposition for open-world settings, and they often use RPG dynamics. For example, in the strategic game, Gangsters 2, we can move our characters on the map and deal with missions as we want, although the level requires a general objective to be achieved within the allotted time. We can also manage our personnel in legal and illegal activities, suffering the effects of financial losses and losing the game altogether in the case of bankruptcy. The role every character has or the abilities the player can unlock, as well as the points they receive at the end of a level, are typical of RPG. A similar scheme can be found in The Godfather, where the ranks are inspired by real roles within Cosa Nostra, while in Mafia II the development of a criminal carrier is tied to the objects taken, thanks to gamer abilities (clothes, cars, light weapons), or given during the campaign (heavy weapons, special cars, houses). Therefore, Vito Scaletta becomes a made man in a specific chapter of Mafia II. There are several variations on the theme, but role-play and action are always central features of any Mafia game. This happens because hierarchy and illegal activities are intimately connected to this criminal phenomenon. Even when it is used to create a funny and intriguing framework in the blackjack simulation game, Mafia Gambling (Gamenesis, 2018), the Mafia is tied to ranks: one of the playable characters, Umberto Calderone, has the aim of demonstrating his success in gambling so as to become the boss of his family.

Gangster or Mafioso?

We have seen how Mafia movies and games are deeply intertwined. In recognizing this, some important questions emerge. First, what is the meaning of 'Mafia' and what is its relation to gangsterism? Once again, we will take, as our example, Mafia Gambling (Gamenesis, 2018). The game presents itself on Steam with the following: 'Welcome to the Criminal Town full of gangsters and mafioso'. The game is not really a Mafia game, as we have seen before. Nevertheless, it does represent an interesting use of the terminology. Not all games have distinct members of the Mafia and gangsters, and casual games in particular often do not follow this pattern. In Mafia Wars, a successful social media strategy game, we can start as 'Street Thug' – which reminds us of modern gangs – with the aim of becoming 'Capo', 'Consigliere', 'Underboss', and 'Boss'. Although the other levels we can reach are not explicitly related to the Mafia, it is fused with other elements in order to create a criminal organization scenario. Moreover, these ranks are similar to those we can achieve in 2006's The Godfather. Hence, Mafia is somehow used as a synonym for organized crime. However, it is evident that Mafioso carries an ethnic connotation that we should use with caution.

Film studies has dealt with this issue by defining and distinguishing between the Mafia movie and the gangster film. Of course, American movies about gangsters have a long tradition: in their golden age, the gangster was presented as a problematic character, whose aspiration to success pushes him to a tragic death. He is often represented as an outcast, placed in a harsh urban setting, or as a member of a specific ethnic group, particularly Italian, whose moral conduct is shown to be highly controversial, if not wholly reprehensible. Despite his success, the gangster's 'final downfall did not purge a festering uneasiness that he was a growing menace and natural by-product of the consumer-driven economy' (Pauly, 1998, p. 779). This scheme is apt even for Irish-American criminals (Shannon, 2005). As Stefano Becucci notes, gangsters are 'sons of modernity', while Mafiosi derive their

strength and rootedness from tradition, intertwining it with modern social skills (Becucci, 2013). A Mafioso must observe strict rules and discipline, with access to significant resources.

As noted earlier, Coppola's The Godfather was a significant cultural moment insofar as it changed people's perceptions of the Mafia. In light of this, Larke-Walsh uses the term 'postclassical' to refer to all films and TV series that came after The Godfather:

> The reason for this is because I feel that while *The Godfather* is an example of postclassical filmmaking, all subsequent gangster films are defined by their relation to *The Godfather* as much as if not more than in their relation to classical films. In short, I wish to demonstrate how the films of the last 40 years present coherences reminiscent of a 'continuous text' that draws upon the classical period, but is mainly influenced by The Godfather. (2010, p. 4)

Cortés gives the same importance to the movie when he describes it as a point of reference within the history of cinema representing Italian-Americans: 'The post-Godfather movie trajectory of Italian-Americans has been, to a great extent, an offshoot or a response to this icon-solidifying masterpiece, a film that in itself integrated the major threads of seventy years of US screen treatment of Italian-Americans' (1987, p. 108). After this film, there seemed to be a clearer distinction between gangsters and Mafiosi. The Italian Mafia uses external relations, corruption and politics. Even if not fully accepted by society, the Italian *made man* is more socially respectable than the simple gangster, and his moral code plays an important role. In my view, the films about the Italian Mafia that come after *The Godfather* have to be seen as examples of the Mafia movie, a sub-genre of the gangster film.

As we have seen, American movies play a major role in how the Mafia is depicted in video games. For instance, we can see the face of Al Capone on the cover of *Gangsters 2,* and the atmosphere of *Omerta* and *Chicago 1930* (Spellbound Entertainment, 2003) draws from the Prohibition era. Nevertheless, we also have to consider another perspective. The Italian Mafia movie has its roots

in a mixture of genres; first, the Western (and the Spaghetti Western), political cinema (inspired by journalistic inquiries), then erotic and grotesque comedy: it was set in Sicily, which was painted as an exotic and mysterious Far West (Morreale, 2007). The Italian-style comedy occupies a midway position between the *cinema politico* and so-called B movies starring famous comic actors (Leotta, 2011). The Italian Mafia movie is more politically focused and often presents the Mob as a problem, albeit sometimes a comic one. In any event, journalism and comedy have had an important influence on this kind of movie. We can recognize some elements of the Italian Mafia movie in *Mafia III* (2K Games, 2016). The way the characters are presented and the way they explain the story of Lincoln are inspired by docufiction. The people who knew Lincoln, the Afro-American protagonist, tell his story: either they speak directly to the camera (e.g. Father James), or some 'authentic footage' is provided from other sources (e.g. John Donovan speaking to the Senate Hearing), while other *cut scenes* depict dramatized reconstructions. Lincoln is a former associate of the Italian Mafia who struggles to take revenge against the local boss in New Bordeaux – a fictional version of New Orleans: his marginal perspective narrates the Mob, underlining the problem of racism.

Hence, it is clear that movie genres served to influence how games about the Mafia are produced. While the American Gangster Film, both classical and *postclassical,* showed the Italian Mob, docufiction and the Italian Mafia movie presented the problematic aspects of this phenomenon. This discourse brings us to a key question: to what extent has this process of intermedia adaptation altered the representation of Italians in the Mob?

ITALIAN CULTURE AND STEREOTYPES

Italian Culture

As noted above, Italian culture can be seen to permeate Mafia games in various ways. Yet, we ought to distinguish those games that have the Italian Mob as a primary element of the story from those that feature it as merely a secondary element. In *Mafia II* we can recognize aspects of the first model. Here we recognize some typical Italian stereotypes from the movies: Italians have greasy hair, a propensity for violence, they use specific nonverbal communication, etc. Nevertheless, the game has an incredible degree of accuracy and coherence. In this light, we might imagine that the game actually mocks such stereotypes. Even the Italian characters on the sidewalks of the Empire Bay open world turn out to be darkly comical: for instance, they would say 'Basta, please!' or 'Per favore, stop!', if they are violently pushed to do so. The important characters speak Italian on special occasions, such as Vito Scaletta's initiation, when the master of ceremonies concludes by calling him 'Amico nostro'. In the World War II chapter, Don Calò and other Sicilians speak in correct Sicilian. Furthermore, Italian flags are everywhere in Italian neighborhoods, some even on walls. Our characters – we can play Joe Barbaro and Jimmy in three installments – dress in fancy suits like the other Italian mobsters, in a nod to the Italian taste for fashion. The Mafia run Italian restaurants, which serve drinks and coffee like other venues in the game, while the 'Italian Delicatessen' branding is printed on walls. Not all the songs on the radio pertain to Italian-American identity, but some of the most famous ones certainly do. The latter are bound up with the tradition of *The Godfather*, such as 'Che la Luna' by Luis Prima, and Italian-Americans on the silver screen: for example, 'That's Amore' by Dean Martin or 'Mambo Italiano' by Rosemary Clooney. Even social aspects play an important role in communicating Italian stereotypes. Female characters play a secondary role in the game: except for his sister, mother and a sister of a mobster, Vito meets prostitutes, dancers and other female characters whose role is merely to pleasure him

or his friends. Even women on the streets are only able to demand mercy. Women had lesser roles even in classical and 'postclassical' gangster films. As Carmela Coccimiglio has observed, 'the mother, the moll (girlfriend), and the wife' and 'a fourth role – the female gangster' are the main roles for women (2013, p. 20) in movies and TV series about the Mafia. The family itself is the locus of social relations: the name of the local criminal organization is *la famiglia* and it is supposed to be even more important than the natural one. Indeed, the natural family is a crucial part of the Italian-American stereotype (Parini, 2006, p. 71). Another interesting element is that of revenge: for instance, the name of one installment refers to 'Jimmy's Vendetta'. 'Vendetta' ('Revenge') is also used in English to denote a blood feud, but in this video game it appears to be used as a cultural reference to Italian culture. Revenge seems to be the final aim of the actions of almost all Italian mobsters in video games: Aldo Trapani, Vito Scaletta, Joe Barbaro, Jimmy and Lincoln Clay all deal with a world that is ruled by *vendetta*, with the latter providing the engine that propels their tragic adventures.

In games that deploy the Mafia as a secondary element, or in those that are more gangster-oriented than tied to the Italian Mob, not all of the aforementioned elements are always present. (See Table 2).

Video game	Italian Culture	Italian language	Social aspects
Grand Theft Auto III	'Double Clef FM' is the radio of the Italian Mob playing opera music	The members of the Leone family use sentences in Italian and Sicilian	Women as secondary characters, prostitutes
Gangsters 2: Vendetta	The face of Al Capone on the cover of the game; names of the Italian mobsters		Female managers and gangsters; the importance of family (the uncle of the principal character is his advisor); centrality of revenge
This is Police	Italian origins of one gang member		Atala Funeral Home is the Italian gang, whose leader is Federica LaTerza
Omerta: The City of Gangsters	References to the Italian diaspora; names of mobsters	The reference to Italian language is in the name of the game	Female gangster available; the Tucci brothers represent a funny parody of Italian family

Table 2: This table is just an example of the Italian culture and stereotypes in video games that feature the Mafia as a secondary element

REFRAMING THE MAFIA: A CONCLUSION?

New and interesting representations of the Mafia have started to appear, largely as a result of a form of crosspollination between gangster movies, Mafia movies, and some other genres. It is not unusual to watch gangsters who are simultaneously humorous and cruel; for instance, when Mr. Wolf came to the aid of two odd criminals in *Pulp Fiction* (Tarantino, 1994). As such, new representations have to reckon with a transformation in Italian Mob stereotypes.

Several elements have contributed to the development of narratives around the Mafia. It is possible to see this process as an effect of the influence of postmodern cinema. Malavasi and Fassone summarize the key elements of this as follows: 'restructuring of the past, irony, meta-language' (2015, p. 128). Postmodern film influences the representation of the Mafia in video games. *Guns, Gore and Cannoli* (Crazy Monkey Studios, 2015) presents a funny mobster who deals with a zombie apocalypse: the game combines Italian body language, Italian-American idiomatic expressions – such as 'Forget about it!' or 'Capisc?' – gangster stereotypes, and comic use of gory violence, horror and sci-fi genres. Even *Omerta* uses similar schemes, presenting Mr. Wolf in person as one of the specialists available for our criminal team. The game is replete with amusing quotes and plays with different genres of fiction: noir, gangster, pulp.

Another trend in the video games industry is that of reframing the Mafia from a critical perspective. As we have seen, *Mafia III* is narrated by the outcast, Lincoln. It depicts forces of racism and ties this to the Mob, to provide a debunking operation, not specifically against the Italian Mob, but rather to discover and explain the broader phenomenon of discrimination within the United States. *This is Police* (THQ Nordic, 2016) does something similar in conveying the power of Mobsters via the point of view of a chief of police who is about to retire. The sophisticated development of the story underlines the pervasiveness of corruption in society: gangsters seem to be merely a mirror in which the police can witness its own degradation.

The role played by Italian mobsters in video games is changing, though some core elements from the archetypal model are retained. The old stereotypes are still used in tandem with the mythological Mafia of *The Godfather* and with gangster films. Nevertheless, new elements seem to supplement and mutate these stereotypes, with the Mob often being used as a vehicle through which social problems can be analyzed and engaged with. Moreover, we can play funny games about the Mafia, and laugh at

it in the process. The influence of films remains potent, but it is clear that Mafia games are something different. There are several common points between the games that are totally dedicated to the Mafia, and those that functionally use it as simply a part of the storyline by recycling Mafia stereotypes established in the movies, but deploying them in various ways or to different ends. In so doing, they partake in what Larke-Walsh calls the 'continuous text' of Mafia representation (2010, p. 4): for the scholar there is a coherent mythology that runs through the classical and 'postclassical' gangster films and TV series. For us, it seems that this continuous text must also be extended to incorporate video games.

This prompts us to pose new questions. In this study, we have not had the opportunity to discover how the games are perceived by gamers: this would constitute an excellent point of departure for a larger research project in this area. Furthermore, a more in-depth gameplay analysis would yield more points of consideration. A thoroughgoing analysis would no doubt provide many interesting and unexpected results.

In this light, it is worth mentioning the study by Jakobsson and Taylor (2003) on the influence of the Mafia in the online RPG, *EverQuest*. It seems clear that there is a contamination, which calls for further exploration. As such, we must resume the model of cinema and TV series to stimulate future studies on the effects of the representations of the Mafia on people, and specifically on those involved in criminal activities. During the creation of *The Godfather*, Marlon Brando met a real-life boss of our American Cosa Nostra; in addition, 'James Caan made such a point of studying the mannerisms of all the mobsters who were hanging around the set' (Gambino, 2012). It has also been documented that the New Jersey Mafia family took inspiration from the deeds carried out by certain characters in *The Sopranos* TV series (Viner, 2006). Might there be a similar influence between the creative industries and the Mafia? Does the reception of this kind of video game have an effect on Mafiosi? Such questions will be for others

to answer in the future. But this study has sought to lay out the main outlines and foundations for such analyses.

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3.

Horizon Zero Dawn

The Educational Influence of Video Games in
Counteracting Gender Stereotypes

Dalila Forni

ABSTRACT

This paper argues that narrative video games have a potential
educational benefit in counteracting stereotypes and promoting
gender equality. In particular, the study focuses on a specific video
game, *Horizon Zero Dawn* (2017). Firstly, this paper analyses
the traditional female models promoted in video games and their
influence on the construction of gender ideals. Then, *Horizon
Zero Dawn* is explored, paying attention to the representation of
femininity and masculinity within the game, as it emerges through

its main characters and their interactions within the narrative. The contribution analyses a specific case study in order to investigate the potential influence of non-stereotyped narrative video games on the perception of gender norms.

INTRODUCTION

The video game industry has been considered a field dominated by men: female players have often been excluded (directly or symbolically) from the gaming community (Dovey and Kennedy, 2006; Cassel and Jenkins, 1998). Despite this, women are often involved in the consumption and production of video games, but they can rarely find equal and non-sexist representations of female characters. Video games, as well as other media, primarily present a heteronormative and androcentric perspective, with a rare attention to different genders, sexualities, ethnicities and so on. Even if some attempts have been made in order to include and attract female audiences, products addressed to girls and women usually focus on traditional activities linked to femininity (Dovey and Kennedy, 2006, p. 36). Thus, far from being inclusive, video games often contribute to strengthening gender norms and roles promoted by other media.

The present study aims to analyze narrative video games from a gender-sensitive pedagogical perspective and explore video games' potential influence on gender education and socialization through a specific case study. Thus, this paper will build on gender role theory and gender socialization theory. Gender role theory assumes that masculinity and femininity are defined by cultural standards and expectations: many social roles are considered culturally appropriate depending on the individual's gender

(Schimanoff 2009). Consequently, according to gender socialization theory, gender norms and behaviors are learned from an early age through different agents. Mass media and cultural representations are claimed to be influential factors in life-long gender socialization (De Santis, 2013; Grossi, Ruspini, 2007). Gender education will be considered as a life-long process that has its strongest influence at an early age, but is particularly effective for adults as well. Narrative video games are usually appreciated both by young adults and adults, and their portrayal of gender norms has a strong impact on the perception of femininity and masculinity.

This paper will focus on narrative video games, or rather video games presenting a strong, fully developed plot and rounded characters. Through their ability to tell complex stories, narrative video games may be particularly effective in counteracting gender ideals using literary patterns that audiences are usually familiar with (Antoniazzi, 2007). Consequently, these texts can be examined through a narrative approach since they are based on the same literary structures that characterize other narrative media, such as books and films (De Santis, 2013; Antoniazzi, 2007). Literary theory, and specifically narratology, will be used to analyze the selected game (Marchese, 1983). In particular, this paper will focus exclusively on the text, as opposed to the paratext, intended as those elements that surround and accompany the main text, such as covers, manuals, titles, advertisements, etcetera (Genette, 1989). Moreover, the main unit of analysis will be the character. The study will focus on the qualities, skills and personalities of single characters and their interactions.

Although many studies have provided feminist and gender-based analysis of video games, there is still a lack of contributions on gender education and video ludic narration (Shaw, 2014, Cassel and Jenkins,1998). Gender studies and gender pedagogy often focus on books, textbooks, cartoons, cinema, advertisements, etcetera as media for gender education, but video games are generally neglected. A gender-sensitive research on video games

and their promotion of male/female models from an educational perspective is still lacking. However, video games are extremely influential tools because they address a wide audience: they appeal to different generations in various countries of the world. Their influence on gender roles should be carefully examined in order to highlight positive and negative models in the video game industry. In this paper, the theoretical narrative framework of literature will be applied to video games in order to analyze a specific case study, *Horizon Zero Dawn,* through a gender-sensitive approach. Beyond the choice of a female heroine, the selected video game presents a variety of gender roles and identities, and reconsiders both female and male stereotypes, offering an equal and complex narrative to gamers.

Thus, video games have a strong educational potential that comprehends gender education, a widely debated and controversial topic from a pedagogical point of view. Therefore, *Horizon Zero Dawn* can be viewed as a relevant text from an educational perspective, as this paper will argue through the analysis of the characters and their interactions.

GENDER EDUCATION

Gender education is a wide and complex process: through socialization, men and women learn what is suitable for their gender in a specific social and cultural context. Gender education builds a determined idea of what is generally considered feminine and what is generally considered masculine. This lifelong process is particularly influential during the early years of a child's life. Gender education is performed in different contexts, at different levels and through different elements (Ulivieri 2007; Biemmi 2012; Burgio 2015; Brambilla 2016).

In particular, masculinity and femininity can be assimilated through different tools that indirectly build gender identity, such as toys, magazines, advertisements, literature, cinema, cartoons, video games, and so on. Most of these tools – and specifically

literature and cinema – work on storytelling and indirectly promote specific gender models through the narration of archetypal stories. Although many studies have been conducted on literature or cinema and gender stereotyping, the video game has not been considered a specific form of narration promoting different gender roles. Nevertheless, video games work similarly to literature and cinema, and encourage specific gender standards, following analogous patterns.

To begin with, narration is a particularly influential tool in endorsing gender ideals. From a very early age, children deal with different kinds of stories – textbooks, picturebooks, novels, cartoons, films, and so on. Thus, children and young adults' narrations may be defined as one of the most effective tools in promoting specific roles for boys and girls. Young girls and women are rarely represented as characters in works for young audiences, while boys and men are particularly common and are often the main characters of the story (Biemmi 2012). From a qualitative point of view, boys and girls are described as opposite extremes in literature for children. For instance, they are characterized by different adjectives, different career opportunities, different spaces where to act, and so on. All these elements work together and create a specific gender ideal that will shape young readers' perception of masculinity and femininity. Although texts for children are often considered harmless, their influence is indirect but constant. Books or films representing traditional roles promote an archaic and rigid division of gender roles, and foster gender-based stereotypes.

Likewise, video games participate in the construction of gender identity of young boys and girls, and in strengthening adult values. Though most of the video games present stereotyped gender roles and identities, some of the most recent products of the video game industry reconsider gender standards and foster modern ideals. For this reason, video games – and narrative video games in particular – may be considered a stimulating educational instrument; they

counteract stereotypes and gender norms, and involve various audiences, from teenagers to adults.

VIDEO GAMES AND GENDER EDUCATION

In this paper, I hypothesize that video games may be effective tools in reconsidering gender norms and standard identities through their characters. Moreover, video games may be particularly helpful in promoting empathy and identification with characters that differ from the player. Tal-Or and Cohen define identification as "the experience of shifting identities" (2011, p. 403). They also argue that identification is usually considered a more involved form of readership, since people are more likely to be emotionally engaged in a text if they identify with a character. This may be true for video games as well. As highlighted by Nardone, the player and the avatar are correlated: video games create a "complicated, multi-dimensional relationship, which involves me and the other me" (2008, p. 4). One of the consequences is a distinctive feeling of responsibility: as stated by Veale, "players become invested in the outcomes of the decisions required to engage with the game, and thus feel responsible for the consequences of their actions within that context" (2017, p. 130). Therefore, some video games may develop empathy and/or identification, since they allow the player to wear someone else's shoes and experiment with different realities, but also to reflect on the player's own experience. As with literature and cinema, video games work as *mirrors* and *windows* (Bishop, 1990). On the one hand, the player may deal with a series of events that resemble his/her own personal experience; on the other, it offers the possibility to get familiar with new experiences and points of view (e.g. people of different ethnicity, gender, age, sexual orientation and so on).

With the increase of female characters in video games, it is now more and more common to have a male player who interacts and feels involved with a female second self. In this case, traditional gender standards are dismissed and the game allows male players

to virtually (and safely) experience a female identity, regardless of social norms (Schleiner, 2001, p. 223). In Kennedy's opinion, this leads to a blurry, queer identity:

> […] having to play *Tomb Raider* as Lara, a male player is transgendered: the distinctions between the player and the game character are blurred. […] This new queer identity potentially subverts stable distinctions between identification and desire and also by extension the secure and heavily defended polarities of masculine and feminine subjectivity (Kennedy 2002).

Video games also offer specific models and create specific expectations in the real world (Kondrat 2015; Felini 2012; Beasley, Collins Standley 2002). For example, considering gender dynamics, in Beasley and Collins' opinion there is "a strong correlation between consumption of media content and attitudes toward acceptable gender-related clothing and behaviour […] Video games are just one source of many for information about what is masculine or feminine" (2002, p. 281). In particular, video games promote gender roles and ideals. When playing games, we can reflect on our identity and wear someone else's shoes, which is one of the main features that makes role-playing so fascinating for both children and adults (Cassel, Jenkins 1998, p. 81).

Although Adrienne Shaw's research showed that many players belonging to a minority group do not specifically care about textual representation – most of them perceived sexism and homophobia in gaming communities as a much more worrying phenomenon – equal, realistic and stereotype-free representations of different identities may bring several benefits. Some of them may be promoting inclusion, gratification, empathy and knowledge of different ways of living. As Shaw explains, "representation provides evidence for what forms of existence are possible" (2014, ch. 1); it allows different people to be part of the collective imagining created by some video games. Moreover, Shaw states that identification is rarely the main aim of the game. Yet, even if players do not always need and look for self-representation and identification, personal involvement may enrich

the game experience, mostly in narrative video games. Besides, Shaw asserts that "players with specific identifiers do not necessarily connect with characters who have those same identifiers" (ch. 1); although identification may take place even with characters with different features, allowing minority players to identify with characters that partially resemble their own experience might widen video game audiences and improve the players experience from an emotional, personal perspective. This may be particularly true for narrative video games, where the player gets closely in touch with the main character, empathizing and, in some cases, identifying with him/her. Indeed, Shaw highlighted that "narrative was identified as the key ingredient in helping players identify with their on-screen proxy" (2014). Subsequently, diverse representations in narratives may widen our involvement in the story and help audiences to imagine the world differently.

In relation to this, it is fundamental to represent not simply minorities, but intersectional identities that go beyond "fixed notions of reality" (Shaw, 2014 ch. 2). For example, a gender-based approach may consider a pluralistic perspective, taking into account intersectional identities and multifaceted aspects of an individual (age, ethnicity, sexual orientation, queer identities, disabilities, and so on). Representations should be articulated and not limited to canonical characteristics; they should avoid "cleanly defined, marketable identity groups", highlighting "the complexity and intersectionality of identity" (Shaw, 2014, ch. 1). The same idea is supported by Tal-Or and Cohen, who argue that identification "describes how people are moved by fiction and how fiction can help people understand the world and their own lives" (2010, p. 403).

This cultural phenomenon is not limited to video games, but video games may be a starting point to overrule gender norms and present different, intersectional identities to a wide audience. In this specific section, I presented a gender-based analysis of the game; however, *Horizon Zero Dawn* offers challenging

intersectional identities as well. Many female characters are related to other minoritarian characteristics concerning sexual orientation, age and ethnicity, as will be analysed in the following chapters.

Although video games are usually particularly stereotyped in the representation of gender roles and gender identities, some works, such as *Horizon Zero Dawn*, reconsider gender structures and offer new possibilities for the gamer. As stated in the previous section, video games offer specific models, and contribute to educate the player, shaping his/her idea of what is suitable for males and what is suitable for females. Video games offering new and complex models of masculinity and femininity allow the player to widen his or her concept of gender in real life too.

AN OVERVIEW OF FEMALE MODELS IN VIDEO GAMES

The video game industry is usually considered to be a male-dominated field: games are – or are thought to be – produced by men for a male audience (Chess-Shaw 2015). Chirchiano and Tuselli defined this process as a "machismo videoludico" [videoludic machism] (2016, p. 302). However, lately an increasing trend in the number of female players has been recorded; nowadays, girls and women constitute a significant section of video game consumers (Kondrat 2015, p. 173). Consequently, it is essential to enhance non-stereotyped models and offer players variegated female and male characters. The presence of multifaceted identities in games played by men and women may influence gender socialization and players' perception of gender norms in real life.

Historically, a turning point in the representation of female models was the release of *Tomb Raider* in 1996. The video game series has been one of the most influential but controversial since the nineties: critics and players have been discussing whether its main character, Lara Croft, is a positive role model for female players or an object of sexual desire created for male players' pleasure

(Cassell and Jenkins 1998; Schleiner 2001; Kennedy 2002; MacCallum-Stewart 2014). Unquestionably, Lara Croft disrupted the canonical female role in computer games: not simply a supporting character, but a heroine that represented and also appealed to female players (Kennedy 2002). Lara could be interpreted as a "stunting body" (Mary Russo, 1994): a female figure that undermines the canonical ideal of the female body through astonishing performances in traditionally male spaces (tombs, urban landscapes, deserts, etcetera) and in male genres (action narratives). Quoting Kennedy's analysis of Lara:

> The transgressive stunting body of the action heroine is replicated in the figure of Lara. Her occupation of a traditionally masculine world, her rejection of particular patriarchal values and the norms of femininity and the physical spaces that she traverses are all in direct contradiction of the typical location of femininity within the private or domestic space. If women do appear within these masculine spaces their role is usually that of love interest (often in need of rescuing) or victim. Lara's presence within, and familiarity with, a particularly masculine space is in and of itself transgressive. By being there she disturbs the natural symbolism of masculine culture.

Lara presents a contraposition of positive and negative qualities: she is strong, active, powerful, but she is also a flawless body to desire, "a fetish object of the male gaze" (Schleiner 2001, p. 223). Lara promotes contradictory values to players: on the one hand, empowerment, courage, independence; on the other, a perfect body ideal that many critics perceived as problematic. This dichotomy has not been completely overcome in contemporary video games too, where many female characters still tend to be represented through sexual overtones.

A female analysis of video games was initially promoted by Anita Sarkeesian, media critic, in 2013. She founded a website – Feminist Frequency – and created a crowdfunded video series called *Tropes vs. Women in Video Games* where gender tropes in video games are analyzed. Because of her intervention, Sarkeesian became a target of sexist harassment through the Gamergate

campaign. Moreover, academic research has been focusing on a gender-based analysis of video games with a quantitative and qualitative point of view (Funk, Buchman 1996; Dietz 1998). Studies tend to agree in stating that the male-dominated perspective brought two main consequences. Firstly, male characters are more common than female characters in video games (Beasley, Collins Standley 2002). Secondly, specific gender models are portrayed concerning both males and females. In particular, this tendency led to two different main models of female characters: damsels in distress and moving bodies (Chirchiano, Tuselli 2016, p. 304.).

To begin with, the damsel in distress (Dietz 1998; Kondrat 2015; Chirchiano, Tuselli 2016) is a passive and innocent girl – often a princess – who has to be rescued by a male hero. The female protagonist is the ultimate aim of the game, it is usually unseen, neither playable or explored in depth as a character. Some examples could be Peach in *Super Mario* (1985) games, but also, Zelda in *The Legend of Zelda* saga (1986).

In other circumstances, female characters are represented as moving bodies. These characters are observed through a male gaze and their physical and sexual characteristics are strongly highlighted (Mulvey, 1975). These women are objectified, sexualised, physically pleasant, and usually keep most of their skin exposed: they have large breasts, wide necklines, tight trousers, and bodies that are both skinny and well-shaped. For instance, *Metal Gear Solid 5* (Kojima Productions, 2015) presents a female character, Quiet, who rarely speaks and wears a bikini and fishnet stockings. The player can watch her showering or having a lap dance for no particular reason except captivating male players (Keller 2017, p. 5).

Moving bodies may be both playable and non-playable. Non-playable characters usually present a superficial personality and are introduced into the game without adding further details to the plot. They appear in the background and their main role is

to be seen and appreciated by male players. Playable characters follow Lara's pattern: they present opposite characteristics and, for this reason, are particularly complex to define. They are often the heroines of the game, and for this reason, they need to be active, brave, intelligent, strong, determined, and so on. Without these features, the characters would not be interesting enough to be played, and the adventure would not take place. Their activeness may equate them to male heroes that share the same psychological characteristics. However, female heroine's bodies seem to portray their gender and their "inferiority" through a strong objectification. Despite their active personality, these playable characters are overly-sexualised, extremely female in their physical appearance, provoking and winking. Their positive characteristics seem to be diminished by the process of sexualisation. They are strong, but they are still the object – and victims – of the male gaze (Schleiner 2001). Their femininity is underlined in order to distinguish them from male heroes and their strengths are lessened by a constant male approach that reduces them to sexual objects to be seen. In Behm-Morawitz and Mastro's opinion, the objectification and sexualisation of strong female models keeps them vulnerable and non-threatening. Their powerful and leading role is diminished by the emphasis on their bodies (Behm-Morawitz, Mastro 2009, p. 810). Some examples could be *Tomb Raider*'s (Core Design, 1996) Lara Croft or *Drakan: Order of the Flames'* (Surreal Software, 1999) Rynn. In particular, Lara Croft has often been identified as "the monstrous offspring of science: an idealized, eternally young female automaton, a malleable, well-trained techno-puppet created by and for the male gaze" (Schlider 2001, p. 222).

Thus, female playable models are highly complex and present opposing features: on the one hand, they promote counterstereotypes thanks to their strength, dynamism, courage, and so on; on the other, they also offer longstanding stereotypes, since they cannot surpass male-dominated perspectives through their appearance. Quoting Grimes: "the female protagonist must reconcile traditional ideals about beauty and body type with the decidedly untraditional gender roles and actions she engages in"

(2003, p. 12). In addition, Grimes noticed a possible correlation between physical appearance and gender stereotypes. She argues that the more the female character is sexualized, the more she adheres to traditional gender norms (2003, p. 13).

Although these models are still particularly common, some of the contemporary video games are trying to reconsider gender norms. New tropes have been presented by the video game industry, such as the non-sexualised heroine or the inquisitive child heroine (Grimes 2003). These new models may be a helpful and an effective tool to educate both young people and adults to counteract social norms and gender-based stereotypes. Moreover, as argued by Kennedy: "If we are going to encourage more girls into the gaming culture then we need to encourage the production of a broader range of representations of femininity than those currently being offered" (2002, online).

HORIZON ZERO DAWN AND GENDER IDENTITIES

Horizon Zero Dawn (Guerrilla Games, 2017) is an open-world video game played in third-person view. It was developed by Guerrilla Games and published by Sony Interactive Entertainment for the PlayStation 4. The story is set in the 31st century, when humanity has regressed to tribal organizations after an unspecified apocalypse. The protagonist is Aloy, a young girl who was outcast by her tribe, the Nora, and adopted by Rost, another outcast. The main character explores the post-apocalyptic world, trying to figure out why she was outcast as a young baby and what happened to the Earth. Aloy explores the environment and deals with a variety of quests and side quests in order to discover the secrets of the past.

The game had a good reception and positive rankings: *Horizon* was mainly acclaimed for storytelling, gameplay, visual aesthetics and character development. The game sold millions of copies worldwide and was awarded the Gold Prize and Users Choice Prize at the 2017 PlayStation Awards, Best Story Award at DICE

2018, and Best Original Property at the BAFTA Awards in 2018, among many other honours.

In order to analyse the game, the present paper will build on Irene Biemmi's research framework (2012). The research explores gender stereotypes and counterstereotypes that typify different characters. The method is based on a research form where different aspects of the characters' construction are investigated, such as the physical aspect, personality, clothes, abilities, interests, and so on. The aim of the methodology is to explore gender patterns and (counter)stereotypes in the construction of the characters, their interactions and influence on gender socialization. The present study draws on some elements of the framework that could be applied to *Horizon*, such as clothes, adjectives, social roles, interactions concerning gender, and so on. Specifically, the study focused on characteristics that promoted a non-traditional approach to gender norms and ideals concerning both male and female characters.

Reconsidering Femininity

Horizon Zero Dawn is a complex and compelling video game from different points of view. First of all, it presents a wide variety of genders, ethnicities, classes and ages. Playing *Horizon*, the gamer is offered the possibility to meet several characters with different personalities and characteristics, such as old women and warriors, kings and tailors, young boys and girls.

In particular, female characters perform different actions and roles that are not necessarily linked to their gender. Women may be heroines, helpers, villains, and so on. In *Horizon*, each woman – even secondary characters with minor roles in the storyline – has specific characteristics and is explored in depth. Consequently, the player is not acquainted with a single female model, but becomes familiar with different kinds of femininity. Therefore, Aloy, the protagonist, does not symbolize all women: she is just one of the various models presented in the game and she does not have the

responsibility to represent a wide and heterogeneous category by herself. So, the gamer may choose which character feels closer and empathize with secondary personalities too. Moreover, women act in open spaces. These elements may seem obvious for video games, but in works of art presenting female characters, women and young girls are usually portrayed indoors, as previously stated. In *Horizon,* most of the women act outdoors. Specifically, Aloy has the possibility to explore a wide open-world, an opportunity that is not common in other media that portray women.

Furthermore, the leading members of the tribes presented in the game are also a relevant element, since they provide different visions on the societies' organization. Some of the tribes are ruled by patriarchy (Oseram and Carja), others by matriarchy (Nora). This gender-based management allows the gamer to reflect on limits and potentialities of gendered power in real life as well. The final message is that both matriarchy and patriarchy present various limitations. Despite this, the presence of a matriarchal system, which is uncommon both in video games and in other works of art, leads to many opportunities. For the first time, the gameplayer is familiar with women that have important roles. In the Nora tribe, women are powerful, respectable, determined, authoritative, wise; they make significant decisions, hunt, fight, and rule their society. In addition, even religion is reconsidered from a gender-perspective: the Nora believe in a goddess called Mother. The tribe is deeply religious, but the traditional Christian system of a male god is reconsidered from a feminine point of view. In this case too, the player is led to reflect on traditional values, which are overturned.

Considering the main female character, Aloy, we can easily find some differences in the models we analyzed in previous paragraphs: damsels in distress and moving bodies. First of all, Aloy is physically pleasant, she conforms to the beauty ideals found in other Western mass media, but she is not objectified and sexualized. For example, her clothes and armor are quite realistic and rarely show her body. As argued by Beasley and

Collins Standley, clothes are one of the prime indicators of sex roles in a specific society and also in video games (2002, p. 283). Aloy wears clothes that may appear comfortable and authentic in the context in which she is acting, and their main aim is not to sexualize her body. This is an uncommon trend, since female characters in video games are usually less clothed than men, and they are often shown with no sleeves, low necklines or wearing halter tops, tank tops or bathing suits (Beasley, Collins Standley 2002, p. 287). As Schleiner argued in analysing Lara Croft's character, Aloy too does not fit the 'bimbo' stereotype: Aloy and Lara, as adventurous and self-confident woman may promote more positive role models for players, and thereby advance new gender ideals (2001, p. 224). However, in contrast to Lara Croft, Aloy shows almost no sign of sexualization: the character goes beyond the model of the playable moving body. Therefore, Aloy offers a less sexualized physical ideal that may encourage other qualities in women, apart from physical appearance (Lopez, 2017).

Moreover, Aloy's character also deserves an analysis from a behavioural point of view. Observing the adjectives used by the other characters in the game to describe her, we can notice that few of them refer to her physical appearance. In some cases, the characters appreciate her beauty, but this is uncommon: the girl is usually admired for other qualities, such as strength, restlessness, courage, cleverness and being headstrong. For instance, Avad, the Sun-King, defines her as "strong, shrewd, capable". Likewise, Elisabeth Sobeck, describing the daughter she wished to have, states she would like her to be as "wilful, unstoppable, compassionate", as Aloy. When some characters are trying to offend or attack her, the adjectives they select rarely focus on her femininity. She is criticized as a person or as an outsider, not because of her gender. As a matter of fact, Aloy goes beyond gender: she is a woman, but her main characteristic is not to be female. She is simply represented as a human being with incredible skills and an extraordinary personality. Thus, Aloy clearly represents the emerging pattern of the *contemporary heroine* identified by Grimes (2003, p. 12): she adheres to Western beauty

ideals, and her body is slight and toned, but not necessarily sexualized; she occupies a profession that is usually considered male (she hunts and fights); she uses weapons and she engages in acts of aggression and self-defence. If Schleiner stated that Lara Croft could "present for women and girls a possible entry point into the male discursive domain of computer games" (2001, p. 224), Aloy may present an equal and non-stereotyped entry point in popular narrative video games.

Besides Aloy, secondary characters also contribute to reconsider gender roles and educate about different possible femininities, offering new models and ideals to the players in real life as well. For example, Petra Forgewoman is a secondary character and member of the Oseram tribe. She is an artisan and an inventor: she created the Oseram cannon, one of the most powerful weapons in the game. Moreover, the roles she fulfils are not typical of female characters. However, her femininity is clear: although her temper and her manners could be considered 'typical' of male characters, her physical appearance highlights her feminine traits without sexualisation. Petra mixes male and female qualities, and for this reason her character goes beyond traditional roles and stereotypes. In addition, her personality is complex despite her secondary role: she is easy-going, self-confident, direct, but in some cases she shows a bad temper, although she is mostly friendly. Furthermore, Petra seems to flirt with Aloy on some occasions: her remarks about the girl are quite clear, as are her innuendos. Thus, *Horizon* offers not simply different female models, but also different sexual orientations in the most natural way possible. Moreover, although Petra could be considered more masculine than Aloy, her gender and sexual identity do not provide a caricature of the queer character.

Similarly, Sona is another secondary female character that reconsiders gender identity and the feminine ideal. First of all, she is the war chief of the Nora tribe and commands all the braves, giving them a precise military strategy. So, she fulfills two traditionally male roles, the leader and the warrior. She is a strong

woman, revengeful, determined, responsible, and serious; she is respected by her group and by her son. She is a mother that wishes to avenge her daughter, whose life was taken during a battle, but her maternal role is not canonical. Sona is not grieving passively and silently; on the contrary, she actively seeks revenge. Therefore, her character offers a new, elaborate maternal model to the players.

Finally, Elisabet Sobeck is another unusual character that counteracts female stereotypes. Elisabet is a woman from the past, the XXI Century, and is the genetic 'mother' of Aloy. She is a scientist and an engineer, two professions that nowadays are generally considered male. Many academical studies show that women are influenced by an educational segregation and, therefore, are not usually keen on science and engineering since they perceive it as a male-dominated field, far from their female perspectives (Biemmi, Leonelli 2016). Elisabet Sobeck has a brilliant career in the scientific and robotic field, and for this reason she could be a captivating model to overpass educational segregation. The character clearly shows that women can also be interested in science and, most of all, can be extremely good at it. Thus, Elisabet reconsiders gender norms by excelling in a profession that is not traditionally related to women. Moreover, the team where Elisabet works is not oriented to a specific gender: women and men work together in order to save the Earth. In contrast with the traditional representation of women and science, Elisabet is the leader of the project she is working on. Elisabet is extremely talented, generous, intelligent and resolute, and for these reasons provides a positive model for young players. One of her most fascinating inventions is GAIA, an artificial intelligence capable of empathy whose aim is to safeguard life on Earth thanks to her terraforming techniques. GAIA is a peculiar character as well: although she has no specific gender, her image and voice are feminine, and her aspect is that of a middle-aged black woman. Gaia personifies the homonymous Greek deity that is usually considered the mother of life and of all mythological deities. Thus, the artificial intelligence represents a sort of Mother Nature, but

this icon standards are strongly reconsidered through her characterization.

To conclude, socialization between women is another key aspect in our analysis of gender roles within *Horizon Zero Dawn*. Some studies focusing on intra-gender conversations in films have shown that differences between women-to-women talk and men-to-men talk are significantly higher than inequalities in character presence (Rughinis 2016, p. 11). In order to apply this aspect to video games, many researchers used the Bechdel-Wallace test with video games (Rughiniş 2016). The test first appeared in Alison Bechdel's comic strip, *Dykes to Watch Out For* (1985). The Bechdel-Wallace test focuses on three main points in order to determine if a film is viewable or not: firstly, the film should have at least two women; secondly, they need to talk to each other; thirdly, they have to talk about something other than men. *Horizon Zero Dawn* would perfectly pass the test: there are several women, they often talk to each other, and they scarcely discuss male-related subjects. Additionally, some critics felt the need to revise the test in order to make it suitable for video games. For example, Nixon (2013) created a different version where playability and influence on the plot are considered (Rughiniş 2016). This adaptation of the test would be passed by *Horizon* as well: most of the female characters have names, and influence the story plot; the playable main character is a woman; women often interact and they rarely talk about men.

Reconsidering Masculinity

Horizon Zero Dawn is also a peculiar video game regarding elements of masculinity. Not only female models are counteracted, but also male gender roles are reconsidered. Video games often present "a masculinity that appears rooted in the traditional iconography of action, guns, and violence" (Kirkland 2009, p. 165). However, few academic studies focus on masculine ideals in video games, while most of the attention was and is focused on female aspects. Diane Carr highlighted this paradox, arguing that

"While the majority of players are reputed to be male, most of the critical attention directed at questions of gaming and gender has focused on girls and women" (2006, p. 5). Thus, further studies should carefully consider both a female and a male perspective in order to promote gender equality and deconstruct both femininity and masculinity.

In *Horizon*, some male characters differ from traditional gender norms linked to masculinity. For example, not all men are necessarily strong, brave, powerful, dominant, virile, aggressive, self-confident, and so on (Alloway, Gilbert, 1998). So, male stereotyping is partially reconsidered as well. One of the clearest examples of male counter-stereotypes is Rost, the main male character who adopted Aloy when she was a baby and looked after her. Despite his traditional physical appearance – Rost is a chunky, strong man who wears animal skins and has a long, wild beard – his personality is not particularly virile. He is kind, patient and wise, and respects Nora rules (his daughter Aloy is much more of a rebel than he is) and loves his family. He is mainly defined by his paternal role: he is labeled as Aloy's father and he is extremely affectionate and caring. Despite his stereotypical aspect, Rost does not represent the traditional absent, affectless or detached father that often characterizes fiction. For example, some of the first episodes of the game show him nurturing baby Aloy with tenderness. When the girl grows up, he teaches her how to hunt and survive in a wild world, but also has values such as respect, love and altruism. In addition, the relationship between daughters and fathers is not so common in video games and art in general: father-son and mother-daughter relationships are far more represented. Rost's and Aloy's relationship is shown to be a positive exception to reconsider male stereotypes and the paternal role.

Another character that reconsiders male ideals is Teb. The boy is particularly weak, and for this reason he works as a tailor instead of fighting for his tribe, the Nora. Teb looks fragile and shy, but demonstrates bravery and honesty when his group needs him. His

life choices redefine gender stereotypes: while Aloy, a girl, starts a journey as a brave, fighting in order to survive and save her tribe, Teb does not abandon his land, where he feels safe, and creates armor, clothes and ornaments. Right at the beginning of the game, Aloy saves Teb when he is attacked by a group of Machines. In this case too, gender stereotypes are counteracted: a girl is saving an older boy who cannot defend himself.

Beyond Video Games: Gender Socialization and Education

From the analysis of masculinity and femininity in *Horizon Zero Dawn*, the narrative of the video game offers a balanced representation of both femininity and masculinity: several characters are anti-stereotyped and most of them accept non-stereotypical norms, considering them as a natural part of their society. Characters that do not present standard gender norms are not criticized and are usually integrated into their society. When they are not integrated, it is usually due to reasons that are not gender-based. Therefore, *Horizon* not only counteracts gender stereotypes, it also renegotiates the notion of gender. The video game goes beyond male and female ideals and represents gender as a social construction that should be reconsidered. In doing so, *Horizon* does not just portray 'uncommon' and diverse characters in order to be politically fair, but it also involves intersectional multifaceted characters that demonstrate the complexity of identity in a mixed and tolerant setting.

Thus, what influence may (non)stereotypical video games have on players? Behm-Morawitz and Mastro's study (2009) demonstrated that video games have significant effects on beliefs about skills and abilities linked to gender. For instance, playing games where women are sexualized or objectified negatively affects women's feelings of self-efficacy and their judgement of female physical capabilities. Also, playing sexualized characters engenders less favourable attitudes about female cognitive capabilities, both for males and females. On the one hand, Behm-Morawitz and Mastro explored the immediate effect of video games on gender

perceptions; on the other, cultivation theory (Williams, 2006) proposes that long-term media consumption can affect consumers' view of the world. Consequently, video games have an indirect influence on the perception of what is male and what is female:

> …a video game landscape where women are represented infrequently and as passive, sexualized beings can precipitate a similar *Weltanschauung* among video game players who consume the message through long and frequent bouts of game play. (Ivory 2006, p. 105)

Fortunately, video games are slowly changing and are now promoting new gender standards that reconsider roles and stereotypes. If stereotyped video games negatively affect the players, we could hypothesize that video games that counteract gender norms may have a positive effect on both male and female gamers.

Firstly, the presence of complex and non-sexualized female characters may allow women to be part of the video game world. Women would feel represented through non-objectified characters and will appreciate video games more and more. For those women that are already fascinated by video games, non-stereotyped characters will make them feel represented equally and not just as objects of the male gaze. 'Real' characters – with normal bodies, complex personalities and a deep background story – increase identification, empathy and gratification (Kennedy, 2002). In *Horizon Zero Dawn*, female players are given the chance to identify with many different female characters. The process of identification is encouraged by a wide spectrum of personalities to empathize with. Moreover, female players internalize multifaceted models that reconsider gender ideals in real life too, considering intersectional issues as well.

Secondly, the representation of well-rounded female characters may have positive effects on male players as well. First of all, male gamers performing a female character can explore a new point of view and have a new experience in someone else's shoes.

Moreover, they can empathize with real female characters: not simply beautiful bodies to be seen, but girls or women with feelings and complex backgrounds. Consequently, the perception of feminine figures in video games and the real world may be positively influenced. Playing as Aloy enables engagement with an active female fantasy figure, providing opportunities for exploration of alternative versions of themselves or identification.

Both for male and female players, the reconsideration of gender standards may affect their perception of gender roles in real life as well. As stated in the first section of this paper, video games are an important part of indirect gender education: they promote specific gender standards and often reinforce traditional gender ideals. Video games with non-stereotypical characters help in counteracting gender norms. Moreover, the presence of different characters that reconsider masculinity and femininity may lead to many causes for reflection on gender identity and social norms. Video games promoting different identities are potential tools to endorse gender equality.

CONCLUSIONS

This paper considered video games and their potential in counteracting gender norms. The introduction offered an overview of studies on gender education, its main tools and contexts of research. Even though video games are rarely considered by teachers and educators, some of them could be stimulating texts in promoting gender equality. Video games could be one of the most influencing and recent media to promote gender standards to children, young adults and adults. Despite this, research on the portrayal of gender identity in video games, and their influence on gender education, is still in its early stage. For this reason, some of the pedagogical potential of video games has been explored in this contribution, focusing mainly on gender socialization.

Thus, the study addresses the urgent necessity of counteracting gender stereotypes through popular media. The article offers a

contribution which might help future studies on the subject in examining gender (counter)stereotypes in narrative video games, and to consider their impact from a pedagogical point of view. This paper focuses on a specific kind of video game – the narrative video game – and explored it through its dialogues and character interactions. For example, much of the attention was reserved for the analysis of the characters, and followed a gender-sensitive and pedagogical perspective. The main videoludic female models were analyzed and two main archetypes were found: the damsel in distress and the moving body. However, I argued that a new model is becoming more and more common: the non-sexualized heroine. The present paper focused on a specific case-study, *Horizon Zero Dawn*, and aimed to analyze the evolution of female and male stereotypes within the game, and to consider their educational benefits. The main characters of the video game have been explored through a gender-sensitive approach, considering both their femininity and masculinity traits. The study examines the characteristics and qualities that were reconsidered in a game with non-traditional gender norms. Therefore, this paper offers an interrogation of the game construction of femininity and masculinity.

Finally, I have been investigating the influence of video games on gender socialization, highlighting the benefits of non-stereotyped video games both on male and female players. Far from being simply a recreational medium, video games' influence on the perception of identity is informal but strong and constant. For this reason, video games should carefully embrace different realities, genders, ethnicities, sexual orientations, disabilities and ages, and include complex identities that need to be represented to become an active part of our society.

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4.

The Street Fighter Lady

Invisibility and Gender in Game Composition

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ABSTRACT

The international success of Japanese game design provides an
example of the invisibility of female game composers, as well as
of gendered identification in game music production and sound
design. Yoko Shimomura, the female composer who produced
the iconic soundtrack for the 1991 arcade game, *Street Fighter II*
(Capcom 1991), seems to have been *invisible to* game developers
and music producers, which is partly due to the way in which
the game is credited as a team effort. Regardless of their personal
gender identity, game composers respond to themed briefs by

drawing on transnational musical ideas and gendered stereotypes that resonate with the Global Popular. Game music, as imagined as suitable for hyper-masculine game arcades, seems to draw on a masculinist aesthetic developed in Hollywood compositions. In turn, *Street Fighter II*'s music and the competitive game culture of arcade fighting games has been interwoven with masculinist music scenes of hip-hop and grime. The discussion of the music of *Street Fighter II* and the musical versions it inspired, nevertheless highlights that although seemingly simplified gendered stereotypes are reproduced within the game, gender identification itself can be complex within the context of game music composition.

INTRODUCTION

Yoko Shimomura is the Japanese female composer of the distinctive and memorable character and scene music of the successful seminal 1991 arcade version of *Street Fighter II: The World Warrior* for the Capcom game development company. On playing an opponent, the first player experiences the graphical and musical theme of their challenger's home stage, such as Ryu's Japanese dojo rooftop-themed setting, Blanka's Brazilian jungle riverside cottage, Chun-Li's Chinese street vendor stage, or Guile's American military base. In this way, the game sets the scene and gives the player a sense of place, time and atmosphere. Some of her home stage music themes, associated with fighting characters such as Blanka, are idiosyncratic and quirky, while many of the music themes also make reference to the music of internationally known action movies, thereby enhancing the mass appeal of the game. Regardless of their own sense of identity, game composers respond to themed music composition briefs that assume, and

often reproduce, stereotypes as shorthand for game scene and character identities. We are currently hearing more about female composers in the Japanese game world. The music stems that Shimomura created for the arcade version were used for subsequent versions of the game, adapted to a range of platforms, and left their legacy in various forms of popular electronic music. However, in the successive soundtrack CD releases of music from the *Street Fighter* franchise[1], she is often not given recognition or credited as the original composer of her iconic *Street Fighter II* themes, even though her compositions can be clearly recognised within the arrangements produced by others on these releases.

The international success of Japanese game design offers a useful example of how gendered identification can work in unexpected ways in game production, and gamer expectations. Nevertheless, there is still insufficient appreciation of the original composition work of female composers of arcade games. Laine Nooney (2013) suggests to "[s]hift the relevant question from 'Where are women in game history?' to 'Why are they there in the way that they are?'. In the case of Yoko Shimomura's composition of *Street Fighter II*'s music themes, she seemed not to be present at all, at the time. As a result, credit for her contributions to game music were *exscripted* from game history until relatively recently. Her work was left uncredited, as was often the case in game sound design and composition where the credit was often to a composition team in which its members remain anonymous, while there was a lack of a record of the game's project team during its development. In addition, there seems to be an assumption within mainstream Western gaming discourse that game producers, developers and composers of male-coded games are male. Yet the music themes and sound effects created by Yoko Shimomura circulate widely as memes within the musical outputs by countless fans and music producers. After first laying out the research context of the

1. Examples: Street Fighter II Image Album. Japan. Scitron/Pony Canyon. 1991; Street
   Fighter Alpha 2 Underground Mixxes "Da Soundz of Spasm". Japan. Victor
   Entertainment. 1996; Street Fighter II Chun-Li Flying Legend. TM Factory/Toshiba
   EMI. 1992 {Credit only via Pseudonym Pii}

discussion, we next turn to the game arcade context of the music composition for *Street Fighter II*. This is followed by insights into the perceived role of Yoko Shimomura within the game company, Capcom. After the discussion addresses the various musical approaches to the characters of *Street Fighter II*, it will be shown how reinterpretations of the music themes further distanced the accreditation to the original composer. Yet, the enduring longevity of Shimomura's work is underpinned by the return to her original compositions for the more recent versions of the game.

METHODOLOGY--FIGHT!

This article was born from a need to address gender issues in the game music industry from the perspective of music production and development. There is an increasing interest in gender and sexuality in general game studies; without intending to be exhaustive, this can be illustrated, for example, by the international organisation Women in Games, which collaborated with *DiGRA* Italia for a conference on the topic in 2018, as well by discussions of women in game development (such as Nooney 2013), gendered gaming contexts (Skolniik & Conway 2017; Kocurek 2015), gender in gaming (Chess 2017; Royse et al., 2007; Wai-ming Ng 2006), as well as cross-gender game play, or "drag", (for example, Hodson & Livingston 2017; Westicott 2016; Schleiner 2001). Similarly, in popular music studies, debates and publications on the topic can be traced back as far back as the 1950s, which can be illustrated, for example, in collections edited by Frith and Goodwin (1990) and by Whiteley (1997), as well as numerous monographs, including Whiteley (2000), Rodgers (2010), O'Brien (2012), Reddington (2012) and Farrugia (2013). However, despite some tentative attempts, such as Machin and van Leeuwen (2016) on the relation between sound and gender roles in mobile games, there is space for further development in the study of gender and sexuality within game music and game audio studies. Although there is an increasing set of publications on the topic of game music and sound, which has expanded since Karen

Collins' seminal 2008 monograph *Game Sound*, the dimension of music is still developing within general game studies (Carbone & Rietveld 2017; Kamp, Summers, Sweeney 2016). Collins' 2016 *Beep* project and other documentaries such as Neil (2014) being recent exceptions, female game music composers are too often rendered invisible within game archaeological practices. This article wishes to address this lacuna with a case study of Yoko Shimomura's influential music and sound effects in *Street Fighter II*, and show that gender role-play not only occurs within the selection of game characters by players, but also within theme-based composition practices.

The capture of data for this article was achieved through a historical-archival approach. Sources include the original arcade ROM program data for the games in question, because much of the credit information is not available online for each game title. More traditional archival sources include final film- and game-credit databases such as the VGMDb.net website, which provides game soundtrack album credits and information, and Mobygames.com, a site dedicated to the preservation of video game credits, as well as the IMDb (Internet Movie Data-base), which has recently started cataloguing video game credits. The data captured were cross-referenced in these multiple sources. It can be problematic to attain credit information from game music and sound design; often video game end-of-game credit material feature pseudonyms or handles, or are merely credited to the game company. For example, on successive releases of both game soundtracks and in-game ROM data for *Street Fighter*, rather than its individual composers the Capcom Sound Team is credited as a whole.

The reflection on the material takes the perspective that identity is discursively situated and articulated (Foucault 1984), and performed (Butler 1990), in this case through sound, music and images. In the context of identity formation in relation to music, Negus (1996, 100) states that, "cultural identities are not fixed in any essential way but are actively created through particular communication processes, social practices and articulations within

specific circumstances". In this sense, we take the perspective that there is no necessary connection between the gender of the composer and the music they create (or of the game player and the music they engage in). Rather, as in the case of the *Street Fighter II* music themes, a set of cultural and gendered stereotypes circulate between Hollywood cinema, Japanese game development, and a global network of game cultures and music cultures that mutually reinforce each other. The connection between the gendered identities of producer and the game characters is not always as clear-cut as it may initially seem.

On the basis of the material we have assessed, we argue here that in composing the music of a game for the *masculinist* space of the game arcade, as a female composer Yoko Shimomura effectively operated with a "double consciousness". The latter term is adapted from Gilroy (1993), in his analysis of what it means to be black in a white-dominated post-colonial society. In this context, a form of *transvestism* (gender role play) occurs in the subjectivity of female composer. This term is borrowed from Mulvey (2009, 35), who argues that, "for women … trans-sex identification is a habit that very easily becomes second nature … and shifts restlessly in its borrowed transvestite clothes"[2]. It is perhaps not surprising, then, that a female composer such as Yoko Shimomura was able to produce a convincing set of macho music themes, basing these on masculinist mythologies that are recycled within the Global Popular (During 1997). We have selected the playful notion of "lady" to refer to Yoko Shimomura, indicating both a notion of subordinate, adaptable, femininity (as was normal during her time at Capcom), combined with fight-ready female assertiveness. "Street Fighter Lady" additionally resonates with the popular imagination, as illustrated by the film *Lady Street Fighter* (James Bryan 1981) and the character Shadow Lady in *Marvel vs Capcom*

2. Mulvey's seminal work on gendered subject positions has been debated extensively during the last four decades since its publication. However, a discussion of her argument is not the focus of the article. The cited statement importantly illustrates the subject position of Yoko Shimomura as a female composer, listening to, and producing, a musical sound track from a masculinist perspective.

2 (Capcom 2000), an echo of Shimomura's favourite female fighting character Chun-Li[3]. At this point, then, we say: FIGHT!—let the discussion commence.

STREET FIGHTER II & ARCADE CULTURE

Street Fighter II was released in 1991 as a fighting game for game arcades. The success story of *Street Fighter II* significantly helped to rescue an ailing game arcade industry, capturing the imagination of players who, by the start of the 1990s, had left the arcade pay-per-play setting to pursue gameplay at home on consoles[4] (June 2013; Skolniik & Conway 2017). Initially only playable on bespoke Capcom CPS1 JAMMA arcade hardware, *Street Fighter II* attracted a hardcore following of players back into the arcade setting, intent on mastering the game's multiple playable characters, using sprites that occupy almost half of the height of the screen. While its predecessor, *Street Fighter*, offers only two characters (Japanese judo hero Ryu and American fighter Ken), *Street Fighter II* enables a selection from six additional unique fighting characters: the mystical yogi Dhalsim; the monstrous Blanka; the troubled character of Guile; the Russian wrestler Zangief; and Sumo wrestler E.Honda, all male, as well as a singular female character, Chinese super-cop Chun-Li. In short, there is a diverse set of characters to appeal to a range of players. By including these characters, presented in lush colour palettes, *Street Fighter II* innovated the fighting game genre.

In 1991, most arcade games had a maximum of around three to four selectable playable characters who shared many of the same moves or abilities, as well as core gameplay mechanics, even if they looked different, as was also the case with the two characters in *Street Fighter*[5] (1987). In *Street Fighter II*, though,

3. Yoko Shimomura did not compose the theme music for Shadow Lady, however.
4. Game consoles such as the Nintendo Super NES and personal computers including the IBM PC, Commodore Amiga and Atari ST.
5. The composer of the game music for *Street Fighter* (1987) is Yoshihiro Sakaguchi (aka Yuukichan's Papa).

each character is featured with their own distinctive background and set of special moves, recognisable sound effects (Shimomura & Abe 1991), backstories and locales, as well as original unique character-based theme music, and character endings that were played on completion of a solo game. With the two playable characters of *Street Fighter,* there was no opportunity for the winner to play against a new player (see, for example Capcom's 2018 documentary, directed by Joe Peter). However, in *Street Fighter II,* the winner is able to play the next challenger, making it a successful (if informal) arcade tournament game. In addition, although a hugely successful single player game, *Street Fighter II* innovated two-player action; at any point during gameplay against the CPU (the computer player) a new (human) contender is able to interrupt and challenge the current two-player game by inserting money into the machine and a quick touch of the start button. This differs dramatically from many of the arcade games of 1991, when Player Two could usually only gain access when the game character of solo Player One dies. *Street Fighter II* also differed because it did not allow players an opportunity to support or co-operate in fighting a common enemy; instead, *Street Fighter II* was about competition between players. Solo gameplay was only possible when the other, human, opponent was defeated.

Importantly, the game differed from its predecessors in terms of its sound design. Game arcades can be extremely noisy environments, where the sounds of different games compete for attention. *Street Fighter II* certainly held its own in the sonic stakes with deep cutting sound effects via the dual sound design within the arcade hardware. An eight-bit sample-based sound chip was used for hard-hitting combat sound effects and vocal samples, as well as for deep, sampled, percussion grooves that could cut through the soundscapes of competitor machines. This was further afforded by the accompanying Yamaha 2151 synthesizer chip, with eight independent channels of FM sound. Later iterations of the game offered stereo sound with side-dependent bias on the sound levels and speaker output for the sound samples, so that players can hear their characters move across the screen.

The game arcades for which *Street Fighter II* was designed, were assumed to be male-dominated public spaces[6] that catered to what Skolnik and Conway (2017) refer to as "Bachelor Culture". Admittedly, as Chess (2017) shows, there are too many chauvinistic assumptions in the gaming industry about which types of games women (the secondary "Ready Player 2", inspiring the title to Chess' book on the matter) would like to play, while Royse et al (2007) evidence that women participate in a wide variety of digital games. Furthermore, Hodson and Livingston (2017) as well as Westicott (2016), for example, discuss how women use male avatars and characters as part of their game play. Nevertheless, being victorious in shooting and fighting games at an arcade can be a measure of competitive macho posture. For example, the friends of the winner can stay on as the competition continues, while there is also the cult of leaving your mark in the high score table, comparable to a graffiti tag, to prove the player's superiority.

Such attitudes can be illustrated in competitive masculinist music scenes that are interwoven with competitive game culture. For example, Gallagher (2017) highlights close links between fighting game culture and the grime music scene, as an alignment between video game play and electronic music production can be found in the use of similar computer technologies for gaming and composition: "(v)iewed as a configurative practice, gameplay betrays striking affinities with grime, affinities highlighted by stories of producers cutting their compositional teeth on games or gaming hardware" (web source). The characteristic competitiveness of fighting game participation can be illustrated in the lyrical battle discourse of Dizzee Rascal's "Street Fighter Freestyle" (2004), and in the rapid name-checking of the fighting characters of *Street Fighter IV* by D Double E in "Street Fighter Riddim" (2015). In relation to links between game culture and the grime scene, Gallagher further notes:

6. For a discussion of game arcades as male-dominated spaces in a North American context, see, for example, Kocurek, (2015).

> That the two scenes are compatible is neither particularly shocking nor necessarily flattering: both thrive on macho taunts and fierce competition, and if fighting game culture still has issues with inclusivity and abuse, grime is no less prone than dancehall or hip-hop to homophobia and misogyny.

A hyperreal exaggeration of gender characteristics is a reoccurring theme, which may be linked to an actual erosion of gender differences in an increasingly electronic and digitised social world (Springer 1991). A gender identity crisis seems partly the result of work that is increasingly based on computer-based activities. Springer argues that this is partly addressed, and temporarily alleviated, through body fantasies that suggest unsustainable differences. Meanwhile, the composer of the character theme music, and co-producer of its popular and often sampled sound effects, is an unassuming female composer who created the sound track of *Street Fighter II* as part of her day job as a member of an all-female game music team.

CAPCOM SOUND TEAM

Yoko Shimomura joined the game industry shortly after graduating from Osaka College of Music in 1988. Capcom released *Street Fighter II* in 1991, the result of its development during the late 80s. In an interview, she observes that "(t)here were a lot of people [on the team] who were outside the norm. I might have been the only one who wasn't" (Leone 2014). However, she also notes that:

> (w)hen I joined Capcom originally, … both of the top composers were women then. I heard them at the time, and they were talented and made great music. I felt that since the head staff were women, it was easier for other women to join the department.

Yoko Shimomura remembers that, initially, composing music for S*treet Fighter II* was not her first choice:

> I ended up working on *Street Fighter 2* by chance, rather than being excited to do it. I was free and had to choose between a few projects,

and just went with *Street Fighter 2*. It was incredibly lucky when I think about it now (Dwyer 2014, web source).

During the 1990s and early 2000s, the Western game developer community was unaware that Yoko Shimomura was female, and that the Capcom composition team was mainly female. This may partially be due to Western unfamiliarity with Japanese names, as well as an overall Japanese game composer habit of remaining anonymous; Yoko Shimomura used abstract pseudonyms in the credits at the end of games, such as: Pii♪ or SHIMO-P, which were not even readily available, as the "credit sequence with staff photos" only appears "(i)f you complete SF2 with a single coin" Dwyer (2014).

In addition, the composition work for arcade games was mainly ported to home computers by male music arrangers/coders, so video game players would end up knowing the cover artist rather than the original composer. The young male composer Isao Abe did additional work on the OST for the arcade game *Street Fighter II*, co-creating the sound effects with Shimomura and composing three tracks, "Sagat's Theme", "VS. screen" (10 seconds) and "Here Comes a New Challenger" (a brief stinger). As Yoko Shimomura left Capcom (for Square and other companies), Isao Abe next produced and composed the music for the *Street Fighter* series following on from the original arcade version of *Street Fighter II*. The sound effects, meanwhile, found their way into the realm of popular culture, whether the use of "Perfect" and other samples by the internationally successful rapper Kanye West on "FACTS" (2016), the use of Ken and Ryu's fire-ball cry "Hadōken" on the obscure 34-second grindcore album opener "Hadouken" by Sordo (2012), or the term "Fight!" in the above mentioned grime tracks.

YOKO SHIMOMURA'S THEMES

While the fighting scenes in *Street Fighter II* are identifiable by their own theme music, these have become synonymous with the

characters associated with the scenes they were designed for. Significantly, the compositions seem to respond with a gender-coded cultural space of the game arcade. For example, Shimomura drew on masculinist Hollywood compositions, such as Cheap Trick's "Mighty Wings" from the film soundtrack to *Top Gun* (1986) for the *Street Fighter* character theme tune of Ken, a blonde American black belt martial arts fighting character. The stomping 1994 rap recording "Street Fighter II (Hyper Fighting Club Mix)", performed by The World Warrior and Einstein, makes extensive use of both Ken's theme and the "Title Theme", as well as of other character sound effects.

Also Guile, a blond flat-topped army boxing character in a green army-inspired outfit, is accompanied by a particularly popular melodic and epic theme. Guile's theme took its influence from a 1984 album recording "Travellers", by the Japanese Jazz-fusion band, T-Square (also known as The Square), which further resonates with the Ryu character theme. It became subject of an internet meme, "Guile theme goes with everything", where fans insert the theme music into a range of unrelated videos at the point where, in the video's narrative, tension builds towards an expected victorious end. The "Guile theme" also appears as a reference point in popular music, in particular hip-hop music, such as Ras Kass feat. Killah Priest & Kurupt (2017) "Street Fighter". Furthermore, versions and interpretations of the theme have appeared in other music styles, such as an embellished version played by classical pianist Sonya Belosova for PlayerPiano (2014), and an acapella version by Smooth McGroove (2013)[7].

When playing *Street Fighter II,* Yoko Shimomura, gives preference to the only female fighter character in the game, the Chinese Chun-Li, "the strongest woman in the world". Her game play is thereby not in "drag". This seminal female fight character does have an active role, though, unlike hegemonic patriarchal assumptions of passive femininity. Much is made of the character's

7. Initial versions of the game had Ken's theme swapped with Guile, which further emphasises the Top Gun influence.

strong legs, which could possibly be interpreted as an implicit erotic fetish that re-inscribes this character into a masculinist fantasy. Still, her powerful moves (curbed somewhat in later versions of the game) ensure that she often wins, making her a popular fighter selection for players of any gender. This enables a dynamic shift in roles during game play, which Westicott (2016: 236) refers to as "distributed subjectivity". Her character resonates in popular culture. For example, in 2018 Nickie Minaj released a track fantasising about being a hyper-sexualised Chun-Li (even though the track does not refer to the original music). The original "Chinese-styled" music theme partially adapts the pentatonic scale, offering an upward movement in a higher frequency range than Guile's epic theme, or Ken's racy *Top Gun*-inspired theme, achieving an Orientalist femininity for Western players. Like Ryu's Theme, her character music has persisted throughout the various versions of the game in the *Street Fighter* franchise; for example, samples from Chun-Li's theme form the musical backbone for the grime rap of Dizzee Rascal's "Street Fighter Freestyle" (2004).

The off-key rhythmic music theme for the monstrous fighting character Blanka is cited as a favourite with some electronic music producers (Neil 2014). Its primitivist repetitive rhythm was inspired by Shimomura's regular train trip to work; it memorably mixes the major key of the melody with the minor key of the rhythm section. Shimomura reminisces in an interview with Dwyer (2014):

> That strange, broken feeling is what made the song for me. People said the music was wrong at the time, but if so many people tell me they love it now, then I don't think it's wrong. I'm finally able to believe that now.

It is exactly this "broken" quality that appeals to electronic music producers whose work is associated with Black Atlantic musical forms, such as hip-hop in the US (Neil 2014) and other break beat-related genres. It may therefore not be surprising that turntablist

DJ Q-bert's work on *Super Street Fighter II* (1993) and A Guy Called Gerald's drum'n'bass recording "Cybergen" (1995) make reference to this theme. Yet, the first casualty of Shimomura's original composition work was Blanka's off-beat backing percussion. As much as it may have been appreciated on the hip-hop scene, Blanka's backing music was streamlined with congas (a musical cliché to signify an exotic primitivism) in *Super Street Fighter II*, losing the unusually low-frequency rhythm of Shimomura's original version.

Although the characters in the *Street Fighter* franchise arguably correspond to competitive masculinist bravado of fighting game culture, they are culturally diverse, attracting a wide range of players who take an opportunity to role-play in the game and outside of it. As Benjamin Wai-ming Ng (2006) points out in his study of male working-class *Street Fighter* fans during the first years of the Millennium in Hong Kong,

> If the world is becoming a "global village", this global village must include different tribes. Japanese games have gained global popularity, but they are interpreted and played differently by players according to their own social and cultural backgrounds. (web page)

Similarly, musical interpretations and adaptations vary, both within the game versions and in wider popular culture.

DI/VERSIONS

Although credit is not always given to her compositions, Yoko Shimomura's original thematic compositions for *Street Fighter II* have been transferred into different environments, while the melodies remain memorable and instantly recognisable. This makes her music themes iconic, enduring through decades of remixes and re-arrangements, which land in a variety of game versions and playing contexts. Due to their recognisable melodies, as well as Shimomura's fluid subject position towards their compositional processes, the original music themes may be

understood as a type of "transferrable object", or musical meme (a.k.a. museme), a signifying component that is ultimately beyond the (gendered) identity and the (artistic) control of the original composer. In remixing or re-arranging a theme, the arranger takes the original composition in a direction of their choosing, making it contemporary for the players by extending it, or by making additions to the original note data. Often, changes made to the composition structure next live on within further iterations of the game series. Such additional iterations, often without proper crediting, add to the invisibility of the original composer, in this case Yoko Shimomura, and work to further de- and re-gender her.

There are numerous examples of the versioning of the music themes across the *Street Fighter* franchise life cycle. We can follow the development of a theme and the addition of music and textural elements through the example of "Ryu's Theme" in the *Street Fighter* series between 1991 and 2016[8]. This character is a familiar mainstay, if not mascot, of the *Street Fighter II* series, who appears in almost all iterations of the *Street Fighter* franchise. Shimomura's original melody line for *Street Fighter II* was arranged in a synthesized rock-guitar style and includes reference points to Japanese culture, especially in its percussion and instrumentation, signifying the nationality and fighting style of this character. The theme has developed in style over the years through the *Street Fighter* franchise via the work of talented arrangers from the Japanese games industry, traversing styles as diverse as synth pop (Marvel vs Capcom[9] 1, 1997; Marvel vs Capcom, 1998; *Street Fighter IV*; 2008), techno (Capcom vs SNK), funk and disco (*Street Fighter Alpha* series of 1995-1996) and rock (*Street Fighter V,* 2016 onwards) during the series' life cycle, from 1991 to the present day. The theme is immediately recognizable as Ryu's, within the various arrangements. The core

8. See Appendix for the full chronology of Street Fighter games from 1991 to the time of writing.
9. Marvel Vs Capcom is a related fighting game series that also contains Street Fighter II characters developed by Capcom and features popular characters from the Marvel universe battling with and against characters from the Capcom roster.

thematic elements and the "vibe" (sonic atmosphere) of the content remain present in the composition, while various elements are incorporated, starting with additional ornamentation in *Street Fighter Alpha*, the "prequel" series to *Street Fighter II*. Its OST is influenced by funk music that can be heard in 1970s action movies, such as Lalo Schifrin's scores to *Charley Varrick* (Dir. Don Siegel, 1973) and *Dirty Harry* (Dir. Don Siegel, 1971), as well as Jerry Goldsmith's OST for *Escape from the Planet of the Apes* (Dir. Don Taylor, 1971) or Quincy Jones's compositional work for *They Call Me Mister Tibbs* (Dir. Gordon Douglas, 1970).

A diversion from the original themes can be found in the *Street Fighter EX* (1996-2000) arcade game series, which were developed by a different company, Arika, instead of Capcom. Arika employed well-known composers for the title, who are otherwise associated with yet another company, Namco, which itself is famous for groundbreaking arcade game music. Ayako Saso and Shinji Hosoe are, respectively, the female and male producers of Namco's iconic video arcade game music for the *Tekken* series, *Galaxian3* and *Ridge Racer*. Their vision for the *Street Fighter* character themes are largely original and take a new stylistic direction towards nu-jazz fusion for the EX series of *Street Fighter*, as can be heard on *Street Fighter EX3's* Guile's theme, "Strange Sunset" (comp. Saso & Hosoe, 2000); this opens with a mellow "tip-toeing" walking bass and jazz guitar (perhaps suggesting a gentler masculinity than the *Top Gun*-inspired Guile theme of *Street Fighter II*) to evolve into an epic high energy arrangement with brass stabs, funk slap bass and djent-flavoured[10] metal solo guitar, worthy of an intense street fight. This complex composition moves away from Shimomura's perhaps cruder macho-gendered interpretation for this character. Compared to the competitive arcade setting, for which *Street Fighter II* was developed, the music for the *Street Fighter EX* series was designed, more than a decade later, for the more reflective context of the home computer. The music for the EX series shows how context is important to the production of a particular gender

10. Djent is a progressive metal subgenre.

identity. Still, although the new thematic compositions have their own hard-core fans, their jazz arrangements lose the advantages of the iconic hooks of Shimomura's memorable melody lines.

Also in the year 2000, the initial thematic compositions of *Street Fighter III* took a different direction, offering entirely new compositions by male composer Hideki Okugawa. Similarly to Shimomura, however, he took his stylistic cues from action movies of the time, particularly Hong Kong action cinema, as well as hip-hop and big beat. The compositions included an underground dance music track for the Dudley Stage ("You Blow My Mind–stupid dope mix") of *Street Fighter III: 3rd Strike* (Capcom 2000) in a musical style that refers to deep house. This is a far cry from the macho music stems of arcade versions, as in the USA this dance club genre is mostly associated with its sexually experimental and male gay clubs. The comparison between Yoko Shimomura's original iconic compositions for mostly macho characters and the "lighter" and more complex versions produced by composers Ayako Saso and Shinji Hosoe and Hideki Okugawa, illustrates how the gender of the composer cannot necessarily be gleaned from the musical styles they produce. Reproducing the discursive sensibilities of the Global Popular, a professional composer is able to (re)create, as well as efface, musical gender stereotypes within the actual compositional processes as required, regardless of their preferred personal gender identity.

We cannot generalise from one version to another, however. Although accomplished compositions, the decision to go with completely new musical material for existing characters in the *Street Fighter III* series was eventually reversed from the inception of the next series, *Street Fighter IV*. Also *Street Fighter V* (2016) remains loyal to Shimomura's compositions, with versions of the original character themes, as for Ryu, Ken, Blanka and Guile, albeit in the orchestrated and rock guitar-driven arrangements and synthesiser solos, which are not present in Shimomura's original compositions, *Street Fighter V* (2016) makes extensive use of

embellishments. Here, the composing and arranging team[11] pay tribute to the original reference points for Shimomura from *Street Fighter II*. By constructing orchestrated versions, the updated themes are stylistically cinematic. However, these ornaments would not have been possible without the core of these themes being established in the original compositions of Yoko Shimomura.

CONCLUSION

The discussion of Shimomura's 1991 OST of *Street Fighter II* not only identifies the issue of invisibility of a game music composer for a Japanese game company like Capcom, it also shows how musical influences can flow via *Street Fighter II* from Western macho film music to macho game arcades, regardless of the gender identity of the composer. We have found that through her compositions for the game, Yoko Shimomura discursively (re)produced an imagined hegemonic *hyper-masculinity*. Through a comparison of versions and alternative compositions of the game character and scene themes, the discussion also highlights a slippery complexity in gender identification within the context of game music composition,. The hidden gender role-play in the composition process for *Street Fighter II* may well have given rise to a possible assumption that its anonymous game composer is male, even though this was not the case. Such gender misrecognition projected onto this female game composer also occurred when her music compositions for arcade games were transposed for home computers, mainly by male coders, who were subsequently given credit for, and are often mistakenly remembered as, the originators of these compositions. While invisibility can be problematic for male composers, combined with a type of *transvestism* (or gender role-play) within the composition

11. Street Fighter V employed a range of different composer/arrangers, but the lead composer is listed as Hideyuki Fukasawa. In order of their contribution weight (in terms of numbers of themes listed as composer): Masahiro Aoki, Hideyuki Fukasawa, Keiki Kobayashi, Zac Zinger, Takatsuki Wakabayashi.

process, such opaqueness can enhance the *excription* of female game composers from game archaeologies. A historical revision of game music composition is therefore recommended. Here, then, we herald Yoko Shimomura as "The Street Fighter Lady".

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