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Amusement VS Gaming

Video games and their ancestors.

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Abstract

In their fifty years of life, video games became a relevant part of the cultural life in the world, recognized as one of the so called Cultural and Creative Industries and are gaining a constantly increasing success both of audience and of global revenues. When it comes to talk about gaming these days it looks that this entire sector is represented by video games alone, while products such as table-top games, that registered a significant growth during the last twenty years, look to be forgotten and of no interest within audience and scholars.

Nevertheless, where do video games come from? And why do video games had such success in the last fifty years? The attempt of the present thesis project is to find answers to those questions, trough the analyses of cultural, social and economic backgrounds, retracing an industry of gaming before video games, and the definition of some of the reasons for their success after their birth in 1972. In the end, the present thesis project tries to define the role of Italy in video games industry.

I. Introduction

The present year, 2022, it the fiftieth anniversary of commercial video games, and since 1972 *Pong* the shape of the industry changed completely. Video games became one of the most valuable cultural and creative industry, and generated $180.3 billion in revenues in 2021 (Wijman, 2021). From their first spot in arcades and bars video games moved into houses, through computers and home consoles, and into museums, schools (Beavis, 2014), and universities (Wainwright, 2014). Video games have their devoted international fairs, such as the American E3 (Electronic Entertainment Expo), the Gamescom in Germany, and the Milan Games Week in Italy. Other global phenomena born from video games: worldwide and prized competitions and championships such as eSports tournaments (Gough, 2022), video games streaming through latest technologies and social networks such as Twitch, the formation of online and offline communities of gamers and modders. Today new releases of consoles and games may be lunched with urban interventions (Purslow, 2020) and temporary installations (Forte, 2020; Tremolada, 2022). Video games became an integral part of the cultural panorama, and now talking about gaming is to talk about video games, although they are not the only kind of game consumption and production today (Santin, 2021). Therefore, the main question that the present thesis project raises is why and how video games had such global success in a relatively short time span, becoming one of the preferred entertainment medium.

Therefore, Chapter 1 is dedicated to a short history of video games, since the first experiments in the late 40s and 50s till the contemporary video games panorama, highlighting the most important moments of the life of the industry, considering the main actors involved and the trends that shaped the

market decade by decade, and describing what survived till today. Chapters 2 and 3, the core sections of this thesis project, are dedicated to the reasons why video games could have such success in the early 70s, and how the nascent industry managed to grow through decades, between failures and new strategies.

Chapter 2 investigates the history of video games ancestors, trying to define the existence of a prior games industry and how the amusement industry in the 70s was relevant to video games success in the same period. Therefore, the chapter is dedicated to a description of the social, cultural and economic contexts within which the video games industry was born and how the amusement industry of that time was present and in what measure within the cultural panorama of the US, at the origins of the coin operated amusement between leisure and gambling, especially through the introduction of *pinball* machines.

If the second chapter focuses on a period anterior to the 70s and the rise of video games industry, Chapter 3 is devoted to what happened between the 70s and the 90s, with notes on the contemporary scenario, and the attempt has been the one to collect narratives and trajectories from sociological studies and from the multidisciplinary field of game studies, tying together elements and stories that have been studied and analyzed separately, to understand how certain aspects of production, perception and consumption are intertwined and how mutually contributed to the success of video games worldwide.

Lastly, Chapter 4 analyzes the history of amusement and video games industries in Italy, highlighting how Italy responded first to the spread of pinball machines and after to the diffusion of coin operated arcade video games, in the attempt to identify the existence and the range of industries of this kind in Italian territories within the second half of the twentieth century. At

last, the chapter considers the presence and the shape of an Italian video games industry within the contemporary global panorama, attempting to identify the volume and the extension of the video game production in Italy, both concerning national companies and foreign firms with a specific Italian division.

Additionally, the following two sections are dedicated respectively to the methodological approach adopted during the writing of this thesis project with the description of the research and study process, and to a definition of what a video game is and in which forms it exists, with the attempt to clarify a general idea of video games without exclude particular forms from the definition.

II. Methodological Approach

In order to conduct an analysis of the video games industry before and after its origin, and to investigate the existence and role of its ancestors and the reasons of such success, different perspectives and approaches will be adopted.

Firstly, the study of video games and their social, cultural and economic contexts, leans on the field of Game Studies, field born in 2000 with the rise of two different approaches to games, the “narratological” approach, that propose the study of games as text and through tools and methods already adopted with other media, as semiotic and narratology, and the “ludological” one, that sees games as a complex social and cultural phenomenon (Salvador, 2015). Game Studies scholars attempted to develop a coherent framework to study games, applying methods and tools adapted from the respective dominions of knowledge. The one of Game Studies is then a multi-disciplinal field that observes and analyses games through a large variety of perspectives - *anthropological* (from Huizinga and Caillois, who described the role and value of game as (pre)cultural in human experience of life, to Conn, who studied pinball players on the field adopting methods common to anthropology to understand the kind of culture that was built around that specific amusement machine), *sociological* (as may be Kocurek and Jenkins’s studies, both focused on the culture around gaming, the kind of participation and ways of behavior, highlighting the subcultural and gender aspects), *psychological* (first among all Jeroen Jansz, who studied the effects of game playing both in individual and social contexts and how these may affect individuals, but also Borowiecki and Johannes, who investigated effects of and relations between gaming and well being, finding attitudes and preferences that are generated by video games), *philosophical*

(as Robson, Meskin, and Tavinor's studies, who analyze video games as objects through their qualities and particularities as the aesthetic of game design and the involvement in fiction interactivity through their field tools), and others.

If on one hand this field have been the most useful tool to understand video games and their role within the last three decades of the twentieth century, on the other their limit is a high concentration around video games, whit less attention dedicated to other forms of game practices. An initial research on online archives and databases that contemplated the term or the concept of gaming, presented results about the video ludic sector, as if gaming was equal to video gaming. To investigate the story and the contexts of their ancestors, the gaming before the gaming, it was necessary to adopt different methods, researching a reference literature out of the field of Game Studies, starting from the different characteristic that an industry could have in the past. Economic and historical data about different industries have been collected and interpreted in order to reconstruct a picture of the past times: the industry in charge for the production of any kind of coin operated device (vending machines, automatic laundries, etc.) and the amusement industry, instead of a generic game industry that could be too small or related to toys. This research has been paired with one that consider each coin operated device devoted to amusement separately and singularly, with the attempt to reconstruct a picture of the kind of production and consumption - time and space, and who - of these specific artifacts, first among all, of *pinball machines*.

A combination of historical, economic, anthropological, and gender studies secondary sources contributed to the reconstruction of a social, cultural and economic background in which the amusement industry and the video games industry could born and rise, and it has provided an

understanding of why video games in the 70s had such success. Nevertheless, secondary sources have not been paired with any field work for this thesis project, although information and knowledges of the field are the results of an auto-ethnographic method. Game studies (through different approaches) and economic researches contributed to have an understanding of how video games industry grew in the last fifty years, either globally and nationally.

Specifically, while Chapter 1, which focuses on the reconstruction of a fundamental timeline of video games, is mainly based on historical secondary sources, like Salvador, Polansky, and Sheff's writings, Chapter 2, which is devoted to the amusement industry before video games, takes into account historical and economic sources (such as Banfi and DeLeon) paired with anthropological and sociological sources, in order to reconstruct a coherent economic, social and cultural context of that period. Chapter 3 adopted game studies sources following different perspectives due to achieve the ilk objective of the prior section, although focusing specifically on the video games industry and highlighting the reasons of its success. To do so psychological, sociological, and philosophical sources have been fundamental and paired with economic data, like Balland and De Van analysis, while examples and references to a more contemporary video games panorama are based also on the author's knowledge of the field. In the end, Chapter 4 adopted historical and economic sources, including databases and reports, in order to highlight the existence and the relevance of an Italian industry of amusement and arcade video games, and to point out the status quo of the production and consumption of video games in Italy in these last two decades.

III. Glossary

The necessity to highlight a general definition of what a video game is and how it is characterized is useful to the present research project, in order to isolate and point out which kind of artifact is the subject of this work. The same necessity relies on the fact that in modern gamification processes and digitalization of the real, many items appear similar and coincident with video ludic products. A proper definition, a description of the support needed in order to experience a video game, and an idea of genres will be described within the following lines.

The Cambridge dictionary defines a video game as:

> *"A game in which the player controls moving pictures on a television screen by pressing buttons or moving a short handle."*
> (https://dictionary.cambridge.org/it/dizionario/inglese/video-game)

Even if this definition highlights many essential aspect of what a video game is, as for example the fact that it is a game based on moving images that requires the interaction of the player through a sort of input device to be experienced, nonetheless the output device is identified as a *television screen*, excluding this way every video game that may be played on devices which are different from the home consoles. Another definition, taken from Treccani Dictionary, affirm that a video game is a:

> "*Dispositivo elettronico (chiamato anche con il corrispondente termine ingl.* videogame*), costituito da un generatore di impulsi video per la simulazione su schermo televisivo o su un apposito monitor di giochi o competizioni sportive (scacchi, tennis, corsa automobilistica, battaglie in scenari fantastici, ecc.), i quali possono essere praticati da due*

concorrenti in competizione (o anche da una sola persona, che gioca contro la macchina, oppure mira ad ottenere punteggi sempre più elevati) mediante l'azionamento di tasti o di un joy stick. Nei tipi in commercio i programmi sono registrati su supporti ottici digitali (CD-ROM e DVD-ROM) utilizzabili su personal computer o su apposite consolle ad essi dedicate; come apparati completi a gettoniera, provvisti di un proprio monitor, possono essere installati in locali pubblici. Esistono anche versioni più semplici, tascabili, con piccolo schermo a cristalli liquidi e controllo mediante tasti, che utilizzano programmi registrati su cartucce." [Electronic device (also called with the Eng. term *video game*), formed by a video impulses generator designed for a simulation on a television screen or an *ad hoc* game or sport competitions monitor (chess, tennis, racing, battling on fantastic scenarios, etc.), which may be played by two competing players (or, also, by a single player who plays against the machine, or aims to achieve higher scores each time) through the use of buttons or a joy stick. On commercial kinds, softwares are registered on optical digital supports (CD-ROM and DVD-ROM) that may be run on personal computer or on specific dedicated consoles; as for example coin operated apparatuses, build with their own monitors, that may be installed in public spaces. Simpler versions exist, pocketable, with a little liquid crystal display and controlled trough buttons, that run softwares installed on cartridges.] (https://www.treccani.it/vocabolario/videogioco/)

This definition surely reveals itself to be more complete and specific than the first one, highlighting again the necessity for the presence of one or more players who may interact with a software through specific hardwares that make the experience of the game possible. It also points out the existence of different kind of hardware to run a game, and different kind of supports in which a game may be installed. Nevertheless, the definition

results to be outdated, excluding a mention to the more modern digital distribution of games, and it is unspecific on the many different kind of video games that are today in commerce.

What looks clear is that a video game is a particular form of game, or a software, designed with ludic purposes that has to be played trough the utilization of electronic devices, both of input and output. Then the question: what is a game? In the field of Game Studies, many articles devoted to the analysis of games and video games quote necessarily the definition of game proposed by Huizinga (1938) and Caillois (1958), and, specifically in the case of video games, the definition of Caillois is readapted to the reality of a game trough devices. From Caillois is, indeed, mediated the division of games in *paidia* and *ludus* and the four categories that define games: *agon*, *alea*, *mimicry*, *ilinx*. If *agon* and *alea* bring with them, respectively, the idea of ruled competition and the pleaser to be subjected to the forces of chaos, the concept of *mimicry* depict the idea of interpretation and immersion in something or someone different from the real world or from the actor, and *ilinx* means the sense of being ruled differently, a passage from a world to another one (Caillois, 2014). What emerges both from Huizinga and Caillois studies is, nonetheless, the idea of separation of the game from the everyday life, a “magic circle” and a moment isolated in time and space (Huizinga, 1973), a safe spot of experience with no tangible consequences in the real life. This particular element is relevant whenever it is necessary to distinguish between video games and gambling online.

Another important step for the definition of what a video game is may be found in 1982. In *The Art of Computer Game Design*, the game designer Chris Crawford distinguishes in the first place the different kinds of games (board games, card games, athletic games, children’s games) and isolates the subject category under the name of *computer games*. This category

comprehends those games that “are played on five types of dedicated machines” (coin-op, handhelds, home consoles, personal computers, and large mainframe computers) that are characterized by animated graphic and in Crawford’s case the opponents is identified as the computer itself (even if multiplayer games already existed). Crawford also try to create a taxonomy around genres and identifies S&A games (skill and action), adventures games, fantasy role playing games, and war games (Crawford, 1982). With this kind of definition the ideas of *software* and *hardware* are again deeply connected (due to the necessity to have a hardware to play a software) but also separated, considering only the software as a game. Even if the definition is outdated, and he used an umbrella term such as computer games, the ideas inscribed in the definition are still valid and coherent with the current *status quo*.

Right after Crawford defines the game affirming that it is “a closed formal system that subjectively represents a subset of reality” (Crawford, 1982) and provides a definition for each word he chose:

- ***formal***: a game has explicit and implicit rules.
- ***system***: a game is composed of parts that interact with each other, forming the game itself in the process.
- ***subjectively represents***: a game is not a scientific model of reality but represent a subjective fantasy and they are subjectively real to the players, even if it does not represent objective worlds.
- ***subset of reality***: a game depict an isolated part of reality creating a focus, while trying to depict reality would turn in reality itself.

These definitions are also inscribed in the first of four elements that, according to Crawford, are common to all games of this kind: representation,

interaction, conflict, and safety. The first may mean, given what has been written a few lines above, that representation consists in a subjective and simplified depiction of a reality, with no need to be objectively accurate. Interaction implies for a video game that it is a dynamic representation, and the dynamism is activated by the interactions between the player and the game in different ways: a game is different from a puzzle because the interaction changes each time a game is conducted; a game is different from stories because the sequence of events is interchangeable in games; a game is different from a toy because the interaction possibilities are limited to those designed by the game designer. Interaction is also the subjective element brought by the player, and it activate the conflict, in the idea of pursuing many goals trough a game facing difficulties and obstacles imposed by the game itself, and it may be direct or indirect, violent or nonviolent. And while with conflict the concept of danger (and harm) arises, safety is the fourth element described by Crawford, and it means that a game is a safe space to experience reality, with no risk for physical (or real) damage out of the game (Crawford, 1982).

Taking into consideration other definition of games, and not specifically a video game, it is worthy to note how the same elements are necessary to the idea of game. Salen and Zimmerman (2003) talks about the game as a system where the players engage in an artificial conflict, strictly ruled, that end with a quantifiable results, while Rolling and Adams (2003) talks about tasks achieved in a simulated environment, and a few years after Jasper Juul (2005) defines the game as a formal system, ruled, based on a conflict for the player. Considering all the definitions described above, it may be possible to find a definition capable to be general enough to not exclude some particular category of video games:

> A video game is a closed and ruled formal system that requires one or more players that have to interact with the software, through a series of hardwares, both input and output devices, in order to experience a conflict of any kind safely, with no direct consequences in the real world, with the aim to achieve quantifiable results and goals.

At this point, once understood what a video game is, it is worthy to briefly describe which kind of hardwares exist, and what kind of conflicts, defined as genres, may be found within the wide panorama of video games production.

One the side of hardwares, following the history of video games and looking at the modern production, the devices that make possible to play may be listed as follow: coin-op, home consoles, personal computers, handhelds, virtual reality headsets, smartphones. A brief description of each device is presented in Table 1.

Table 1 - Video Games Hardware

Device	Description
Coin-op	A device that integrates screen, speakers, and input devices such as sticks and buttons in a unique, huge construction. The term *coin-op* is the short form for *coin operated system*, which means that in order to play a game was necessary to put a coin in the machine to activate it. A coin-op host only the game for which it is designed and it was meant for a public dimension.

Device	Description
Home Consoles	A device capable to run one or more video games, paired with an input device presenting sticks or buttons. A connection to a home television is required. The first home consoles did not have audio integration and in a few cases was meant to play only one game. Game may be played with or without installation on the device through cartridges or CD-ROM (nowadays video games may be also downloaded and played entirely digitally. Home consoles are meant for private dimension. Modern console enable the user to play online.
Personal Computer	A device that is not meant to be a ludic station, but may support several video games. Before the introduction of Windows95 several models of personal computers existed, and after that the computer games market developed faster. Games may be played through keyboards and mouse, joysticks, joypads. In cases of personal computers games need to be installed through data devices (floppy disk, CD-ROM, usb devices) or digitally downloaded. Computer games are meant for private dimension, even if exceptions exist. Personal computers enable the users to play online.
Handhelds	A device that integrates screen, speakers, and an input device composed of buttons. It is a small console capable tu run several video games, installed most commonly on cartridges but even in small CD-ROM (Few exceptions include small devices with one game installed). They may integrate touchscreens in the newest devices. They are meant both for public and private dimension, but do not have an autonomous internet connection.
Virtual Reality Headsets	Hardwares designed to create a complete immersive experience through the use of remotes with buttons and the players body as input devices. They are meant both for a private dimension and for a public one with more sophisticated settings.

Device	Description
Smartphone (or other mobile device)	Devices not meant as game stations, but may host several video games developed exclusively for smartphones and tablets that may be downloaded and installed digitally. The same input devices of the smartphone are the ways to interact with the game. They are meant both for private and public consumption, with the possibility to play online through the autonomous internet connection.

Talking about the kind of conflict video games propose, or, with another definition, their genres, it is necessary to note that quite often they overlap, creating artifacts that may be hybrid genres or sub-categories of macro-groups. During the last fifty years, since the commercial birth of video games, many authors and researchers tried to find a way to classify and distinguish all the products that started being released. One of the first, as written above, was Crawford with his *The Art of Computer Game Design* (1982). Even if it is outdated and theorized after only ten years, it was organized in categories based on mechanics and gameplay of games. Divided into two macro-groups (*Skill and Action Games* and *Strategy Games*), he found eleven categories, way to naive to describe the contemporary panorama: as an example Crawford distinguish between *Paddle Games* and *Sport Games*, indicating with the first term the clones of *Pong* (1972), while today they may be considered the same genre; or again the category *Miscellaneous Games*, imagined to collect all those games difficult to categorize.

Other game scholars proposed different categories. One example may be Myers (1990), who described a categorization based on text, structures and interactive functions and defining six categories (*arcade*, *adventures, simulations, RPG, war-game, strategy*) that consider specifically

the relationship between game and player. Again in 2009 Arsenault proposed a theory that could take into account the evolution of genres itself and to not have them as unchangeable boxes, based on functions and aesthetic. The game scholar identifies also the moment of switch between a “clone of a video game” and the definition of a genre based on stylistic and aesthetic elements. Even if Arsenault’s proposal results more equilibrated, in this research project the taxonomy adopted will be the one proposed by Salvador (2013) divided in twelve genres that take into consideration game mechanics and gameplay, to which one more genre will be added. In addition, this approach is based on the same criteria used for the definition of tabletop game genres as described by Santin (2021), resulting useful when it comes to compare the two kind of gaming. A brief description of each genre is presented in Table 2.

Table 2 - Video Games Genres

Genre	Description
Action Games	Games based on fighting and movement (often acrobatic) actionable through buttons sequences. A particular kind defined *hack ’n slash* defines those game based not on buttons sequences but on mouse clicks to activate actions.*
Adventure Games	Games based on explorative sequences (both stealth and not), simulated in a limited environment or in an open world context (sandbox). Also adventure games of the kind *hack ’n slash* exist.*
Drive/Racing Games	Games based on driving cars/bikes of any kind, from more realistic such as *Gran Turismo* to fantastic one like *Super Mario Kart*. A few games may be considered also Sports Games, but it is not a mandatory characteristic for this genre.
Beat ‘em up	Games based on fighting both on levels, as for example *Final fight,* and on matches, such as *Mortal Kombat* or *Street Fighter*.

Genre	Description
Platform	Games based on a fixed scene, as *Donkey Kong*, or based on traveling from scene to scene from left to right, as *Super Mario*. Specifically in 2D or false 3D.
Puzzle Games	Games based on the resolution of puzzles and enigma, characterized by the absence of a narrative context or, if present, by a poor one, such as *Tetris* or *Angry Birds.*
Role Playing Games (RPG)	Particular kind of adventure and action games based on the strategic development of the characters, more often created by the player him/herself starting from a range of classes with specific positive and negative characteristics. A specific genre is constituted by those games made in Japan and called J-RPG. They may be single player games such as *Dragon Age* or *Final Fantasy*, or they may be multiplayer online simulated in worlds that host hundreds of players simultaneously, and they are called MMORPG (Massive Multiplayer Online Role Playing Games)
Rhythm Game	Games based on music and rhythm, as may be *Just Dance*, and sometimes paired with input devices as guitars or drums such as *Guitar Hero* and *Rock Band*.
Simulators	Games characterized by an high degree of realism and dedicated to a specific activity or sector, as may be *Farm Simulator* or *Train Simulator*.
Shoot 'em up	They may be both *first person shooters* (FPS) such as *Call of Duty*, and *third person shooters* (TPS) as a few *Resident Evil*, mostly based on war scenarios and centered on the use of guns to win.
Sports Games	Games based on any aspect of sports activities, from *Football Manager* to *Fifa* and *UFC*. The sport aspect is the totality of the game, depicting also real tournaments and teams.

Genre	Description
Strategy Games	Games based on strategic resolutions and planning, they may be in real time, as *Starcraft*, or in turns. They require an intellectual approach to any situation. In this category fall also those games defined *god games*, where the player control different aspect of the game as a superior entity. Examples of this kind may be *The Sims* or *Civilization*.
Augmented Reality Games	Games based on the mix of real world and virtual games elements through the use of cameras, and based on the real world. In this kind of games players need to explore their city in order to achieve results in the video game. Example of this category is *Pokemon Go*.

* Often Action games and Adventure games are hybridized, characterized by mechanics and gameplay modes common to both genres.

1. A Brief History of Video Games

The main scope of the following chapter is to describe, without any claim to be exhaustive, a brief history of the video games industry from its birth to the present, highlighting those that are generally considered the most important turning points within the long evolution process of these specific artifacts. In addition, this chapter is useful to introduce those events that proved themselves fundamental for the success of video games production as a specific and very particular industry.

1.1. First experiments: 1947/1972

Even if the video game as a commercial product born officially in 1972, consequently to the release of the first *coin-op* produced by Atari, there are few episodes that are relevant to this brief history. As a matter of fact, prior to 1972 different experiments have been made, in fields quite distant from commercial industries.

An artifact that may be defined technically the first video game – or a *proto-video game* – is dated 1947 (Polansky, 2016). Since 1940 physicists Estle Ray Mann and Thomas T. Goldsmith Junior, while specializing in the developments of cathode ray tube, came up with the idea of creating an electronic game and seven years later they submitted a patent for the *Cathode-Ray Tube Amusement Device* that was a game based on the manipulation of the light beams of an oscilloscope in order to shoot some targets overlaid to the screen. It is interesting to note here how the idea of fun or entertainment is highlighted in the name itself (Cohen, 2019). After a little more than a decade, the American physicist William Higinbotham designed in 1958 *Tennis for two*, realized as an artifact to be displayed at the annual public exhibition at the Brookhaven National Laboratory, where he

worked. This video game was based again on the technology of the oscilloscope and was designed around the ability of an analogue computer - the Donnel Model 30 - to calculate and simulate the trajectories of missiles and bouncing balls with wind resistance. *Tennis for two* was a multiplayer game, and the players, from the perspective of the side of a tennis court, were able to manipulate the trajectory of the ball using a knob and a button trying to send the object on the other side of the net (https://www.bnl.gov/about/history/firstvideo.php).

A different kind of experiments is also dated to the first years of 1950s: the *NIMROD* (1951) and *OXO* (1952). The first one was developed by Ferranti International, a Britannic firm, in occasion of the Festival of Britain and it was a computer able to play the game of *Nim*. Nevertheless, because of the absence of a screen this experiment is surly part of a pre-history of video games without being a real one (Knowles, 2015). The latter was the Alexander S. Douglas's PhD thesis at the Cambridge University around the idea of man-machine interaction: the game was developed on an EDSAC Computer, and the player could play a match of *Noughts and Crosses* against the computer, and in this case the game was experienceable through a graphic screen (Winter, 1996). In any case, both the cases were classified as experiments and were too expensive to be mass commercialized.

Moving forward to 1960s, another renowned experiment was born in an academic environment: in 1962 a group of engineers at the Massachusetts Institute of Technology (MIT), led by Professor Steve Russel, designed and developed *Spacewar!*, a war game that ran on a PDP-1 Computer, and, due to the absence of an AI, it was meant to be played by two players: each player controlled a spaceship, with the aim to shoot the

enemy's one. The singularity of this experiment is that it was the first game designed with specific physical rules ad variable situation (Markowitz, 1999).

But a decisive turning point happened in 1966, when the Chief Engineer for Equipment Design at Sanders, Ralph Baer, came up with the idea of using a TV set for playing games. Starting from there, the engineer developed a two-player game and a new input device (a light gun) useful to play. Between the end of 1967 and the beginning of 1968, a first version of the video game *Ping-Pong* was completed and patented. Within the same year, in October, Baer developed a switch-programmable video game unit capable of support different games. Finally, in January 1969 Baer added to the unit a joystick and the light-gun and created the first home console for video games, called *The Brown Box.* Baer's console has been commercialized in 1972, with the name of *Odyssey* and produced by the American firm Magnavox Company (Baer, 1998).

1.2. The commercial birth: 1972/1983

Right after the official release of the Magnavox's *Odyssey* home console, video games officially born commercially in 1972, through the efforts of two personalities in the field: Nolan Bushnell and Al Alcorn. The first one produced his own game in 1971, titled *Computer Space*, but gaining a scarce commercial success and soon forgotten. Almost consequently to the release of the *Odyssey* console, Bushnell started to work with a young engineer, Al Alcorn, and together founded Atari, one of the main actors involved in the rising video games industry in the first decade of its life. The first video game released by Atari was, eventually, a coin operated (*coin-op*) machine version of one of Baer's game: *Pong* (Salvador, 2013). This first video game, as many others within the following years, was characterized by simplified graphic and functions, and specifically in the case of *Pong* the

mission of the game was to keep hitting a ball, endeavoring a potentially endless match. *Pong* was so successful that Nolan Bushnell and Al Alcorn decided to make Atari a *coin-ops* producer company instead of a software developer one, and after the resolution of the lawsuit carried on by Baer and Magnavox that made of Atari licensed for the concept of *Pong*, the firm grew fast and produced an home version of its first coin-op, while a huge number of competitors entered the market turning it in a red ocean rapidly (Herman, 2001).

In the same period another revolution for the industry was almost ready to enter the market. An engineer employed at Fairchild, Jerry Lawson, developed in 1976 the first removable cartridge for home consoles (Polansky, 2016). To deeply understand why a technology designed to make possible to run more than one software on a single hardware was such revolutionary, it is necessary to consider that, during the four years passed from the release of the first commercial video game, hardwares were sold with their softwares installed, without the possibility to run something different from the chip built in the hardware itself. The removable cartridge made possible to designed an hardware capable to run any compatible game. The second generation of home consoles (the first generation is the one started with the *Odyssey*) was based on this standard. The first one to adopt the Lawson's invention was the *Channel F* designed by Fairchild (1976), but the undiscussed protagonist of that period was the *Video Computer System 2600* designed by Atari and released in 1977 (Charans, 2011). Due to make it a commercial success, Bushnell needed more funds, and for this reasons he sold the company to Warner Communications. Till 1983 other consoles were produced: the *Odyssey 2* by Magnavox in 1978 and the *ColecoVision* by Coleco in 1982, that could count on the exclusive of

the console version of *Donkey Kong*, developed by Shigeru Miyamoto (Salvador, 2013).

Before going further in the battle for the domain of consoles market it is necessary to make one step back to analyze the parallel history of arcade video games, living at that time their golden age because of a high quality level of the artifacts and the originality of their developers and programmers. As for example, *Space Invaders*, developed in 1978 by Atari, *Asteroids*, *Battlezone*, and *Defender* were followed by another game that quickly became a mass phenomenon, developed to attract a larger female audience and far from the concept of war of other games: *Pac-Man* by Toru Iwatami, released in 1979. At that time already legal battles and lawsuits between producers, developers and publishers happened on a daily basis not only around patent violations, but focused on matters such as copyright and intellectual property (Day, 1998). Both in the case of arcades and home consoles that market grew faster again and in 1983 a large crush invested the entire American industry and main protagonist in those events was the Atari itself.

Several reasons brought to an apparent permanent stop to the industry. In 1982 Atari announced a growth rate decrease around the 10%-15% for the next year. In addition, the new console released, the *Atari 5200*, came out as a commercial failure, an excessive amount of copies of *Pac-Man* have been produced and the new game by Atari, *E.T. - The Extraterrestrial,* released prematurely under Steven Spielberg's pressure, was a completely failure, as heavy as the company decided to bury all the cartridges of the game under the Alamogordo's desert, in New Mexico (Trautman, 2014). Eventually, a lawsuit for insider trading to Al Alcorn represented another problem, mostly to the eyes of the public opinion. Only few producers were able to recover from the crisis: Atari sold every part of

the company except its arcade division and Coleco and Vectrex disappeared from the market.

1.3. The re-Boom of the Industry: 1984/1992

While the American video games industry was slowing down and the third generation of home consoles began whit the *Commodore 64*, and Electronic Arts was producing its first sport video game, in 1983 Nintendo released in Japan the new home console *Famicom*, better known globally as *Nintendo Entertainment System* (*NES*), with a series of high quality video games such as *Super Mario Bros* and several commercial deals with the main Japanese software houses (Namco, Bandai, Capcom, Konami, Hudson and Taito). Due to these reasons the new console produced by Nintendo, released in the American market in 1985, and in Europe the year after, was a commercial success and was able to recover the industry (Salvador, 2013).

While Nintendo was developing its console, in the American panorama another producer was moving towards the home console market: Sega Enterprises, founded during the ‘60s and devoted to the export in Japan. The first home console produced by the firm was the *Master System* in 1986, and it was also technically superior to the *NES*, but the latter could count on more loved and charismatic titles for its audience, such as Miyamoto’s *The Legend of Zelda or* Yokoi’s *Metroid*, and other relevant third parties video games such as *Metal Gear* and *Castlevania* by Konami and *Dragon Quest* by Enix (Sheff and Eddy, 1999). But just few years later, in 1988, Sega released the console named *Sega Mega Drive* (*Genesis* in the USA), starting the fourth generation of home consoles. The hardware was more performing than the *Nintendo Entertainment System* and even the software houses started preferring Sega to Nintendo, due to the possibilities

of experimentation that the new hardware granted (Charans, 2011). In this period the Japanese giant was losing against the aggressive campaign promoted by Sega ("*Genesis does what Nintendon't*"), that could also count on a top game such as *Sonic the Hedgehog* as fascinating as *Super Mario*, but Nintendo was still able to release a console completely different from the others, the *Game Boy* in 1990 designed by Gumpei Yokoi with the top game *Tetris*, designed in 1984 by Alexey Pajitnov, property of the Soviet government and obtained by Nintendo when the rights were granted after the lawsuits for the copyright (Salvador 2013).

A last note to the end of the period of reborn of the industry concerns the introduction of a new technology that changed the way of producing and distributing video games: the CD-ROM. NEC and Sega were the first hardware producers to design a console adapt to the new medium, respectively the TurboGrafx-CD and the Mega-CD.

1.4. From Doom to the contemporary market: 1993/2020s

In a period of almost ten years, starting in 1993, events and turmoils in the industry changes completely the faces of the protagonists in the market, creating the basis for the current *status quo*. In the early '90s it is worthy to highlight the technological creations that open up a massive opportunity for further development: one is strictly related to the video game panorama, while the second is related to the entire word. The latter is about the development of an hypertext at the CERN in Geneva, between 1989 and 1993, that made the computer scientist Tim Berners-Lee the man who invented the World Wide Web, developed already at the date August 6, 1991 when the existence of the project and the software was announced in different newsgroups, and the first person external to the CERN viewed the page seventeen days later. In 1993 the World Wide Web was released for

everyone and had an almost immediate success (https://home.web.cern.ch/resources/video/computing/brief-history-world-wide-web).

In the same year a new PC game was released: *Doom*. Produced by idSoftware, a Texan Software House, this video game was the first of its kind (excluding the first attempt of *Wolfenstein 3D*): a game based on a first person perspective immersed in an explorable 3D word, and the first *first person shooter* game. Despite the already innovative idea of the game itself, idSoftware came up with other two particularities: first, a brief version of the game available for a limited amount of time was released trough *shareware* (what today we may call *demo*) for free; secondly, part of the code was released to the public as well letting the users to create *mods*, i. e. modified versions of the game that could be altered in its soundtrack or graphic appearance (Galofaro, 2005).

What followed within the last years of the XX century defined the industry and the market till our days. In 1993, while the console market was contended by Sega and Nintendo, trough their consoles, respectively, the *Mega Drive* and the *Super Nintendo* (*SNES,* released in 1991), Atari tried a last effort lunching a new console, the *Jaguar*, but its story ended whit a failure, also due to the absence of high quality video games for the new hardware. In 1994 Sega tried to anticipate again its competitors releasing *Saturn*, followed right after by Sony that developed its first console: rises from the ashes of a jointed project between Sony and Nintendo, the Sony's engineer Kuturagi, once the latter left, obtained to keep the project and came up with a CD based console, the *PlayStation* (Charans, 2011). While Sony had already some very attractive games and was able to sell its console at a cost that was 25% cheaper than the Saturn one, between 1995 and 1997 many things changed. Microsoft released *Windows95* and since that the computer games market grew differently (Salvador, 2013). Nintendo, that

was losing its already subtle superiority, released the *Nintendo64* (1996), a cartridge based console, and since cartridges were still more expensive to produce and, subsequently, to sell, Sony was becoming the leading actor in the market. This advantage was granted in 1997 by the deal between Sony and SquareSoft, software house responsible for the *Final Fantasy* saga, and the release of the seventh chapter (*Final Fantasy VII*) was a huge success.

Between 1998 and 1999 Sega released *Dreamcast*, a more powerful hardware, trying to anticipate again the next generation of consoles, but the company soon understood how that strategy resulted poor when Sony revealed that Kuturagi and his team were working on a console that could also be a media center, then released in 2000 globally (*PlayStation 2*) covered by a huge marketing campaign and great games such as *Kingdom Hearts* and *Final Fantasy X*. In 2001 Nintendo entered the new generation with the CD based console *Game Cube* and Microsoft, already in computer games market, decided to participate with the *Xbox*, a console based on a computer architecture and run by a Windows operative system.

The year 2002, when the four main actors (Sony, Microsoft, Nintendo and Sega) was battling, happened to be the decisive moment to define the equilibrium that even today stand at the basis of the market. Sega closed permanently the hardware division and kept going as software house, while Microsoft and Sony continued developing hardwares and acquiring software houses in order to keep control on exclusives games respectively. Nintendo lose ground on the home consoles market, resulting to be the first handheld consoles producers with products such as *Game Boy Color* and *Game Boy Advance*, defeating also Sony's *PlayStation Portable* (PSP) and *PlayStation Vita* with the modern production of Nintendos *DS* and *3DS* and created a whole new market in 2006, when a completely different home console based on a more pedagogical approach, *Nintendo Wii*, was released (Salvador,

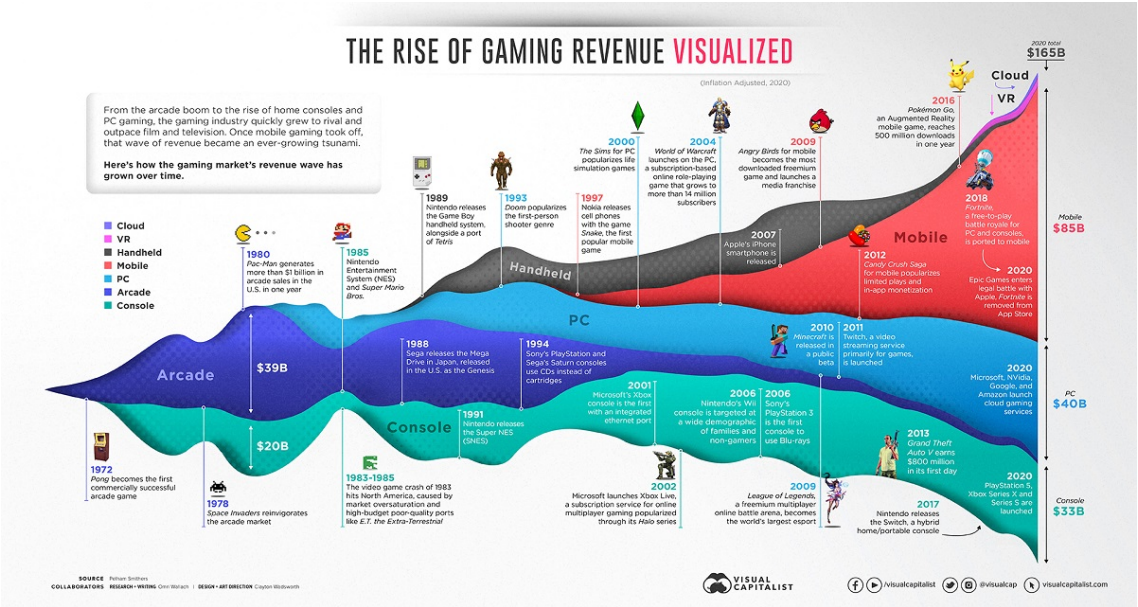
2010). Sony and Microsoft engaged a console back-and-forth battle, developing the first *PlayStation 3* (2006), *PlayStation 4* (2013) and *PlayStation 5* (2020), and the latter *Xbox 360* (2005), *Xbox One* (2013) and *Xbox Series X* (2020).

Especially considering what has been written above, video games industry has always been strictly connected with other industries devoted to the technological development, building connection not only with them but also with other media and entertainment industries. If home consoles, handhelds and computers evolved trough times following other general technological developments, not necessarily related to the video games world, a mention within the last lines of this brief history of video games has to be devoted to a particular phenomenon that built itself around specific modern technologies, particularly internet and mobile phones development: *social games* and *mobile games*, respectively led in the first years, according to Mauro Salvador (2013), by Zynga and Rovio. The video game category defined social games is strictly connected to the wide spread of social networks among users all around the world and with Facebook the production of this kind of games reached its highest moments with products such as *FarmVille*. On the other hand, considering mobile games as that particular kind of game that may be run on a mobile phone, one of the first examples of this kind may be *Snake*, a built in video game, modeled on the concept of 1976 *Blockade*, in 1998 Nokia 5110. Developments of internet and many different technologies related to mobile phones industry, such as touchscreens or GPS, created the possibility to develop and to distribute video games characterized by a high graphic quality and way more complex than *Snake*, such as, for example, *Angry Birds* by Rovio and *Call of Duty Mobile* by Activision.

The brief history reported by now highlights the events and the actors that became essential to the industry and that made a technical experiment a market today worthy $180.3 billion (Wijman, 2021). Within the following chapters of this thesis project, the attempt will be the one to answer a question, i.e. why and how video games had such success, becoming a relevant CCI and a synonymous of the idea of *gaming* itself? And where do they come from?

2. Games before Videogames: shapes of amusement

Through the first chapter of this thesis project, the attempt was to describe the history of the video games industry in its key moments. While underlying what happened in the last five decades, the several moments and events that characterized the rise of this industry has been taken into consideration *per se*, excluding any kind of mention about the world and the contexts (social, cultural and economical) within which video games born and had their success.



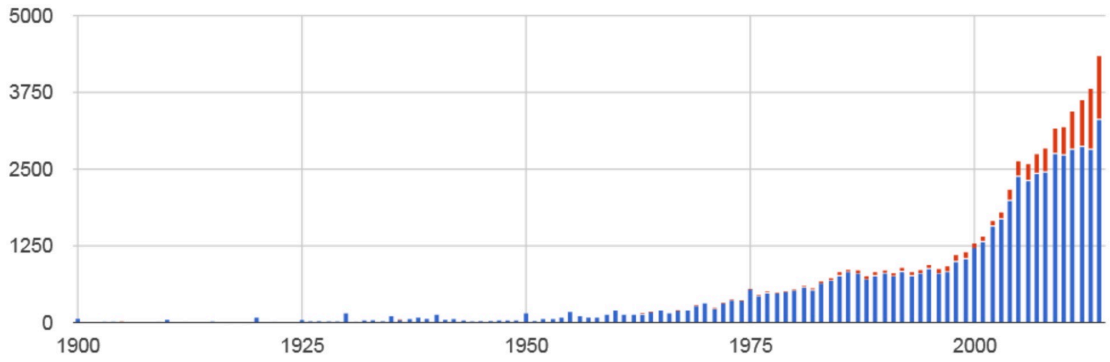
Graphic 1 - Wadsworth Clayton, *The Rise of Gaming Revenue Visualized*, 2020. From Wallach Omri, *50 Years of Gaming History, by Revenue Stream*, 2020. https://www.visualcapitalist.com/50-years-gaming-history-revenue-stream/

The graphic above, taken from Visual Capitalist website (Wallach, 2020) summarizes the same history and points out the revenues generated by the industry in 2020 ($165 billion, split upon the main segments of the market), highlighting both that *Pong* was the first Arcade coin-operated game officially released in 1972 being the first economic success and that Arcades

still exist nowadays, even if they turned on a niche market for collectors and old fashioned gamers. Another element that should be noticed in the figure is the title itself, where the term proposed, *Gaming*, clearly is referred only to video games' revenues in the last fifty years, excluding different ways of playing as may be tabletop games and highlights what may be defined a sort of lessical shift in its meaning. Furthermore, the figure presents a more interesting detail: 1972 is surely the starting point of video games, nevertheless there were other industries and games before that year, and they were intimately connected to Arcades themselves. That little purple fragment before *Pong* lead to a few questions: did a game industry exist before video games? And which elements characterized that industry? And again, why have video games been successful in that period?

To approach video games keeping in mind the contemporary panorama of genres and titles available makes impossible to ignore several deep connections and similarities between video ludic products and tabletop games both in terms of themes and mechanics of gameplay. It is indeed known that games and the attitude to play were present in human societies since very ancient times, as for example *Senet*, an Egyptian board game from 3100 B.C., or *mancala* games as *Oware* or *Bao*, both from the period between 3000 and 1000 B.C. in Africa and South Asia. From more modern ages it is also possible to quote the Italian game cards producer Dal Negro, active in Treviso since 1756 (Santin, 2021) or Nintendo Koppai in Japan, founded in 1889 by Fusajiro Yamauchi to produce *hanufada* card games (Sheff, 1994). Nevertheless, since the beginning of the twentieth century USA and Germany became majors producers of tabletop games. And specifically in the first country famous games such as *Monopoly* by Parker Brothers (1935) and *Dungeons and Dragons* published by Gary Gygax and Dave Arneson in 1974, the first RPG (Role-Play Game) and successor of

more ancient war-games (Santin, 2021). Those few examples are useful to indicate that during the twentieth century the production of board games existed and was growing, as it may be seen from the Graphic 2 below, elaborated by a user of BoardGameGeek.com based on the data present on the same website. Even if the graphic may be incomplete, it is still a useful reference to have an idea of the production at that time.



Graphic 2 - Board games production since 1900 till 2015.
https://boardgamegeek.com/thread/1508576/article/21662975#21662975

According to the graphic the production of board games during the period between the 50s and 70s grew and the common elements between tabletops and video games became more relevant only since the 80s and 90s, even if one of the first experiments in the industry, *OXO*, was a computerized version of the *paper and pencil* game *Tic-Tac-Toe*. Nevertheless, taking into consideration the North American' social, cultural and economical frameworks, there is another sector within the leisure industries that happened to be the bedrock upon which videogames have been commercialized at first: the amusement industry, identified today on the United States Labor Department's website as amusement, gambling and recreation industries (https://www.bls.gov/iag/tgs/iag713.htm). The dedicated page, updated the 15th July, 2022 today separate sectors NAICS7131 and

NAICS7132,: the first is referred to Amusement Parks and Arcades, while the latter stands for Gambling Industries. Nevertheless, during the Twentieth century this division did not exist and the shape of the industry was more subtle than today, and the majority of the industry was represented by several kinds of coin operated devices, i.e. forms of electromechanical entertainment often activated by coins and the interaction between the man with a machine.

2.1. Men and Machines: a historical background

The story behind the relationship between human kind and machines for entertainment and leisure purposes has its roots in the second half of the Nineteenth century and the early Twentieth century with the introduction of machines in the factories, making the connection between human and machines a social, cultural and economic issue at that time. Simultaneously in the second half of the Nineteenth century a line of different machines appeared in several public spaces such as bars, hotel lobbies, railway stations, piers and seaside resorts (Wade, 2020) or other in dedicated *penny arcades*, not devoted to factories and work hours but designed to be used by workers during their free time or holidays. And particularly from the 1880s different models of machines defined coin operated machines or, more generally, slot machines, were developed: vending machines, strength testers, fortune-telling machines, listening and viewing machines, etc. (Huhtamo, 2005).

Within the vast production of coin operated devices for entertainment purposes, scholars such as Huhtamo (2005, 2016) and Sharp (2007) pointed out how few specific inventions had a determinant role in the normalization process of electromechanical amusements, both in the case of the United States and in the case of Japan a few decades later: the

Phonograph Parlor, and the peep-shows machines known as *Kinetoscope* and *Mutoscope*. The first two machines have been inscribed by Huhtamo (2005) in the group of the “automatic machines”, because of the minimal role of the user in the functioning process, that was mostly independent after the coin was inserted. The *Phonograph Parlor* was designed by Thomas Edison as an improved version of the 1877’ phonograph and it was commercialized the first time in 1890 in the United States. The machines had a pair of headphones to be wear by the user and for its design it was possible to watch (providing a visual component to the experience) the cylinder phonograph running behind a glass panel. The *Kinetoscope* was designed and developed by Edison and one of his employee, William Kennedy Laurie Dickson. It “presented moving images from a strip of celluloid film threaded between numerous spools inside the viewing cabinet” and the “images were peeped at through an eyepiece at the top of the cabinet” (Huhtamo 2016, p. 23). Both the machines was not necessarily coin-operated, even if many models presented this characteristic depending on the places they would have been installed in, and nevertheless, the role of the spectator was equally passive once paid the fee, given the fact that the machines were powered by an electric motor. The *Mutoscope*, introduced in 1897, was developed by William Kennedy Laurie Dickson and Herman Casler, and it was a novelty peep show box. This particular machine had three main vantages against its predecessors: (1) the frames were copied on paper, and it was a less fragile support; (2) each machine was by standard a coin operated device; (3) it was hand-cranked, feature that made difference in the process. In the case of the *Mutoscope*, indeed, the spectator had the responsibility to keep the show alive by maneuvering the lever that made the images move, and it was possible to adjust the rotation speed of the cylinder or even stop it in order to watch better a particular frame (Huhtamo 2005).

This opportunity of interaction was meant to create a stronger bond between the user and the machine while emphasizing users' physical or mental skills, with the first attempts to incorporate the idea of mastery. With this proto-interactive aspect the *Mutoscope* was also associated with other kind of amusements devices such as strength tests, rifle ranges and sporting games of various kinds that were growing in number all across the United States at the end of the Nineteenth century. And even if it was possible to find these machines in a wide variety of places - pubs, bar, saloons, hotel lobbies, piers, fairs, stations - being a supplementary amusement to social gatherings, in the same period spaces known as *penny arcades* began to appear in several cities, but, differently from the arcades of the Twentieth century, they hosted several curiosities and were not devoted to gaming as a social practice *per se*.

There are few considerations to be made about the social perception of these new machines that were populating public spaces so fast. In the first place, the new trend of electromechanical amusement was meant for an adult audience: the height of the peepholes of the kinetoscopes kept children away from machines and mutoscopes mechanisms were hardly being used by young attendants. Secondly, the audience was characterized by a strong manly majority, due to the fact that most of the places where it was possible to interact with the machines were also places less attended by female audiences. A possibility for children to get acquainted with these amusement devices was with the help of their parents, given the fact that the experience could take place in family oriented public spaces like fairgrounds or amusement parks, where the devices were placed alongside other attractions, like merry-go-rounds and roller coasters (Huhtamo, 2005).

An important link at the turn of the century was the introduction in 1895 of the bell slot machine, a gambling coin operated device more similar

to the modern machines identified as such. Originally designed and released in San Francisco by Fey, around 1906 other versions of slot machines were designed in Chicago by Mills Novelty Co. (Prairie State Gaming, 2022), and the city rapidly became the slot machines world capital with ten companies specialized in manufacturing this kind of machines. The history of this part of the amusement industry is complicated and populated by episodes both of acceptance and repression, depending on States, anti-gambling statutes, and the kinds of machines: a curious moment, for example, was the introduction of the “mint vending machine”, i.e. a slot machine that gave a candy in exchange of a coin and then paid out in slugs, that could be redeemed in cash. This was just one of the subterfuges to avoid anti-gambling counter measures, and it did not last long because of the cost of the machine, that was higher than the one of regular bell slot machines.

Nevertheless, slot machines were popular and they were sold freely and openly, and it was far from being an underground business conducted by gangsters as it was depicted. Indeed, the network involved in the market of slot machines was articulated and functional all over the United States: leading manufacturers was able to sell machines directly to clubs and organizations, but more frequently they relied on distributors located in major cities. Distributors then had machines, both new or used, to be sold to operators, that “rent” the devices to premise owners sharing the profit equally. By 1950 has been estimated that the network was made up of 175 distributors, and 10.000 operators, with 70.000 owners reported (Anonymous, 1950).

From 1931 Chicago became the capital city of another form of amusement coin operated machine, defined the ancestors of videogames, that was meant initially for amusement only and, except for the little time

when those machines could be used to win prizes and associated that way to gambling, it kept that way: the *Pinball game* machine.

2.2. Pinball games and new social habits

The first pinball game was manufactured in 1929 in Youngstown, Ohio, and rapidly from 1931 pinball machines were manufactured in Chicago. By 1933 the machines were electrically operated, and sounds effect and flashing lights were added (Anonymous, 1950). With the exception of the time span from 1935 to the post war period, when pinballs were produced also as gambling devices, manufactures soon adapt the projects in order to put in the market a machine that would be for amusement only.

Descendants of Bagatelle Parlors, early mechanical improvements to bagatelle games, pinballs were designed initially mostly as games of chance. Produced in Chicago by companies (often involved also in slot machines manufacturing) such as Bally (Raymond Maloney's *Bally Hoo*), and Gottlieb (*Baffle Ball*), the first models did not present the classic interactive flippers, that have been added to the game in 1947 by Harry Mabs. The first pinball with flippers installed was *Humpty Dumpy* and it had six of them, and in 1948 Steve Kordek decided to adopt only two flippers to be placed at the bottom of the table in a central position creating a standard that survived till today. The introduction of flippers was a relevant moment for the industry, since pinball became effectively games of skill, taking distance from gambling slot machines (DeLeon, 2012). Nevertheless, pinball was banned until mid-70s in many cities, including New York and Los Angeles, but gained anyway more acceptance for the general public and was part of a deeper cultural shift during the post war period, with the turn toward Fordism and the clear definition of teenagers as social category (Kocurek, 2012). With pinball the audience for coin operated amusement devices grew and

the spaces for play changed including places attended also by teenagers such as malls, bowling alleys, and colleges recreation spaces for students. While other machines as for examples jukeboxes were supplementary devices to the free time of teenagers, pinballs became a new space for practicing skills different from merely physical strength and a space of confrontation with friends and peers, and they also became an opportunity for teenagers to spend (or invest) their own money, gained with small labour activities within their spare time.

Pinball machines offered a different relationship with the user, being more interactive and becoming a game of skills the concept of mastery introduced by mutoscopes was a significant influence, and their design was meant to capture all the senses at once, turning into an immersive experience for the users. Visually they were shiny plastic-and-metal machines, and bright colored and themed, associating pinball with card games or sports. Pinballs were also electrical and presented small screens that displayed simple video effects during games, noting scores and announcing special objectives unlocked by the player with loud sound effects. The devices were then loud, they clank every time the iron ball hit a target and buttons pressure was noisy and a direct consequences of the efforts endeavored by the players. Even the position of the player, obliged to embrace the machine to hold the buttons placed on the side panels, was a fascinating part of the experience. The score aspect was meant eventually to stimulate a sense of competition, against the machine and against other players: the higher the final score the higher the mastery of the player. It is worthy to note that for a pinball player, the idea of mastery it is not referred only to the game, but it meant to master the machine itself controlling it physically. These elements have been highlighted by Conn (1981) in his study of the social context of pinball, where the author analyzes the figure of

the *pinball player* and the etiquette of a sort of club, with rules and a relationship with the machine that could not be understood by non-players. Conn observed two different environments where teenagers played pinball, a student union and a pier arcade, and noted also what kind of relevance had the idea of cheating in those contexts: differently from sports, that are strictly ruled and full of forbidden actions, playing pinball was all about dominate the machine, possibly avoiding to trigger too much the tilt mechanism inside the machine that could turn off the device interrupting the game. Excluded this exception, every action that could have been considered cheating was adopted by the player and accepted by the spectators as solution developed by the players to beat the machine: for example, it was common practice to lift or rolling the machine in order to influence the trajectory of the ball, and the author used a magnet with the same purpose in order to study the reaction of the attendants and the employee in both the places. For the owners of the machines cheating was not allowed, because those action could affect their profits, while for the communities it was not relevant.

Pinball became a cultural phenomenon among teenagers and started defining the idea of the gamer as socially recognizable before videogames arrived changing everything. Pinball was then so successful that arcades devoted to the game, hosting several machines lined up against the wall, began to appear in the united states assuming a completely different meaning of the one of the prior penny arcades. This change and the abandonment of other kind of coin operated device has been fundamental for another country: Japan. As a matter of fact, while pinball was gaining success, lot of older coin operated devices were abandoned and eventually they have been resold in Japan, where they were seen as curiosities and these Western products have been incorporated within their own culture, turning the pinball in *pachinko*. This way the Japan get closer to an idea of

industrialization through the spirit of play and developing an idea of amusement in public spaces similar to the American and European ones, maintaining at the same time a Japanese uniqueness (Sharp, 2007).

2.3. The Arcades

As the socioeconomic context was strictly connected with the times when pinball machines grew and became popular, the same happened between the last 60s and the early 70s when the first commercial video game was released. Taking into consideration also the experiments with computers and the new technologies between the post war period and the sixties, it is evident that a new kind of relationships between human beings and machines within the work places was taking place because of the computerization of offices and white collars occupations. Even if slowly, computers were on their way to become more familiar to the general public and videogames arrived, especially for teenagers, in a moment in which the new technologies were fascinating and attractive. In addition, a new set of values were growing around science and computer technologies, especially after 1969 moon landing, opening new spaces for different personal skills (Kocurek, 2014).

When *Pong* was first released in 1972, it was a success and several coin-ops where distributed, through the same network prior adopted from the slot-machine and pinball industry, and were placed next to pinballs in several different places such as lounges, bars, pubs, bowling alleys, malls, and so on. Rapidly many places had few cabinet videogames and modern versions of arcades grew in number all over the United States creating effectively space where people went in order to play as first objective, elevating the action at main event and no more representing a supplement while hanging out with friends.

Economically for many companies the new coin operated devices for electronic amusement would be a good business for many reasons: they were cheaper to be produced and the game design was meant to offer short matches with difficult levels, but with easy to play mechanics and rules that did not need complicated instructions and manuals. And even if the pioneers in the video game sector were start up companies devoted to videogames only, other companies differentiated their product offers: on one hand there were Atari and Exidy, on the other older pinballs and slot machines manufactures such as Bally, Rock-Ola and Gottlieb. The short time of gaming, especially for novice player, was an incentive to play more and improve personal skills in order to get better in a specific game and Carly Kocurek described her personal experience explaining how for 15 minutes of play she spent 2,50 $, then describing how more generally a hour session would cost between 8$ and 12$, depending on the skills of the players (Kocurek, 2012).

The new arcades, became soon places where anyone could pass his/her spare time, playing with friends and peers while consuming the money gained from small labor activities or handed by parents. Furthermore, arcades became spaces where a new culture was being born, built upon computers and fascinating iconographies extrapolated from games and promotional images. In different occasion Carly Kocurek gave descriptions of what a classic arcade looked like, emphasizing the sensorial aspect of being in an arcade analyzing three different aspects of the environment: ***sight***, ***sound***, ***play***.

Sight

> "The arcade beckons visually, its name blasted in neon or cartoonish script, the machines inside visible through the windows or open doors.

The most popular games are surrounded by clusters of onlookers, some of whom have added a quarter to the top of the cabinet to hold their place in line. The fluorescent lighting is low to maximize the visibility of the machines' cathode displays, allowing the glow of the screens to light players' faces. The game cabinets offer the lash of concert posters, screaming their names in lurid orange and yellow, attempting to entice with images of intergalactic robots, implausibly leggy cartoon characters, and bizarre creatures. The unoccupied games play in attract mode, displaying top scores, titles, and short bursts of simulated play. The screens tease. […] in an older [arcade], pinball machines may line one wall or occupy a corner, or perhaps there are pool tables. If this is the case, older patrons may be absorbed in rounds of pool or pinball wizardry, leaving the newer machines to younger customers." (Kocurek, 2012, pp. 190-91)

"A manager makes rounds clutching a ring with dozens of keys. He opens machines to refill ticket rolls, clear quarter jams. Occasionally, he gives up his repair efforts and tells one of the younger employees to mark the machines with a sign made from copy paper, "Out of service" scrawled in black marker." (Kocurek, 2015)

Sound

"Inside the arcade, as the machines blink and blast, players punch and pound at them, and the hard plastic buttons clack against their casings. Change machines spill quarters in a noisy avalanche, or a teenaged employee doles tokens into plastic cups. You can hear the frantic pace of play almost before you see the action. There can be no quiet here; even if the place were abandoned during a mid-afternoon dead spell, the machines would continue untended, playing an infinite loop siren song of computerized audio, a chorus of boops and bleeps. The pinball machines in the back corner clank mechanically, remnants of the machine age. Other machines bleed even stranger sounds, like the Q*bert voices, randomized and generated by Votrax. Perhaps the

arcade staff make announcements over the PA, or a cluster of children sings “Happy Birthday” at a long table near the heart of the arcade. The voices mix with the machines. Conversations here are clipped, efficient, divided neatly into the space between levels.” (Kocurek, 2012, p. 191)

Play

“Pick a quarter out from the change in your pocket and choose a machine, any machine. [...] Put your quarter in the slot where the machine swallows it with a faint metallic clank before the game announces itself; the machine awakes from attract mode and switches into assault. [...] Make it maybe 60 seconds, or survive the first level on a game you haven’t played before, and you have proven yourself exceptional. Go again. Find yourself dead, confronted with the listing of top players.[...] After level one, level two, level three. Go again. More quarters. You’re sweating in the refrigerated air. Go again. The last quarter burnt, you hit the machine hard enough to sting your hand. You feel foolish, but no one notices. They’re too busy watching some kid down the row who’s been playing steady for an hour on one quarter. Perhaps at this point you say enough and leave. Perhaps you don’t.” (Kocurek, 2012, pp. 191-92)

As many others coin operated devices, even videogames arcades were welcomed with suspect by elder generations, that saw there a place where their sons and daughter can spend too much spare time wasting time and money, instead of dedicating themselves in more useful activities. Furthermore, there was a generational distance created by new computers: teenagers and young adults were experiencing directly the new relation with new technologies that would be fundamental in their future work places and occupations, while parents did not know how to deal with new relationships with the machines they never experienced before. Already in this sense coin-

operated video games were covered with an educational role, the same ways as toys for kids like tea cups and hammers were an early way to learn what the adulthood would be like (Kocurek, 2014). But differently from toys, video games arcade, as pinballs and other amusement devices, was designed for older audiences: the height of the machines was over the possibilities of youngest children, as Turkle reported in *Videogames and Computer Holding Power* (1984). Another problematic aspect related to arcades was the fact that those semi-dark places looked like a space where it was possible cultivate violence and addictions to gambling and substances. There were both negative and positive thoughts about arcades, and Walter Day among others tried to highlight arcades as positive and safe places of experience and behavior, as we will discuss in Chapter 3.

3. Turning into *gaming*: videogames' success

As we saw through the last chapter, video games joined the American amusement industry rather than a pre-existing games one (or, at least, joined the same concept of industry and industrial production), and gained an immediate success among teenagers and young adults. Arcades acquired their most famous shape, as it is depicted in todays tv series as for example in *Stranger Things*, becoming gathering places for those who wanted to play games, competing against different kind of machines and friends. Through the decades video games industry keep develop new and more complex games, expanding the possibilities of interaction and playability, till today, a moment in which the term "gaming" looks to be related uniquely to video games playing: trying to search for the same term on the Internet will bring immediately to contemplate millions of results dedicated to video games, and rarely something related to other form of games (as for example the industry of tabletop games in all their declinations). As a matter of fact, through the last fifty years videogames grew day by day: they are a captivating ever-changing media, a form of entertainment that offers countless possibilities both of fruition and creation, also inscribed in several creative and cultural industries models (Santin, 2021) with a global value of more than $180 billion (Wijman, 2021). Since the first release of *Pong*, landscapes and scenarios changed completely. Nevertheless, why this particular cultural product gained success becoming almost a synonymous of *gaming* itself?

Scope of the present chapter is to attempt to trace and to highlight the main trajectories that defined the industry we know today, which represents an hard task mostly because of the pervasive nature of the medium in everyday life and on different levels: a study of the reasons for

global video games success has to take into consideration several layers that cross different segments of global societies and that, nevertheless, are extremely intermingled and hardly separable from each other: if it is necessary to understand the industry behind the production of video games, it is fundamental to contemplate also responses and feedbacks coming from players, and if it is mandatory to analyze the interconnections between video games industry and other high tech industries, it is important to understand how video games encompass time and space of users. The field of *Game Studies* represents the best bedrock to analyze the aspects and understand how they communicate and influence each other, given the multidisciplinarity of approaches (psychological, sociological, economic, cultural, etc.) and results. Given the complexity of the themes, the following pages will present focuses on the main reasons identified for video games industry success, and they will be analyzed diachronically, taking into account both the first years and more recent developments, instead of chronologically.

3.1. Industrial setting and inter-industries relationships

The first element that may be taken into consideration is that video games industry was born as such. Relying on the amusement industry's logics, especially for the production of coin-operated cabinets. Furthermore, distribution processes and methods followed the same path of slot-machines and pinballs, with the system based on the chain of producer, distributor, owner and operator. This aspect, added to the fast appearing of several game developers firms, both new start-ups such as Atari and Exydis and older coin-operated giants such as Williams and Gottlieb, was crucial to the first success of arcades: as a matter of fact, it is estimated that about 25 millions video games machines were distributed in America by December 1981 (Kastre, 1992). A race of this kind toward the production of coin-op

arcades was one of the problems that caused the first crash during the early ‘80s, that ended with the failure of several smaller developers and manufacturers. Coin-operated video games represented good investments and revenues, which convinced different elder firms (as for example the board games producer Parker Brothers) and new start-ups to produce artifacts of the kind, even if it was not possible to guarantee a high quality level of products while facing a growing demand by a more finicky audience of players. That first crash in the new-born industry was the turning point in which the actors involved started adopting new strategies in order to preserve a high quality of the products. One case from Nintendo’s experience may be sufficiently clear both to point out a strategy adopted and how that strategy looks to be today: in 1985 Katsuya Nagawa applied for the patent of a lock-out system used on the NES. As Lunney (1989) reported Nintendo started:

> “with a lock-out microprocessor and a program. This pair is placed into the circuitry of both the base unit and the cartridge. When the cartridge is inserted into the base unit, the lock-out microprocessors exchange a timed sequence of signals. If the timing and the signals match those the lock-out microprocessors have been programmed to receive, the base unit will load and run the game stored on the cartridge. If the signals stop or fail to match, then the game stops.” (Lunney, 1989, p. 32)

The patent was eventually granted in 1989. This particular choice of system aimed at reduce the number of software houses licensed by Nintendo in order to produce video games runnable on NES consoles. This way was possible for Nintendo to keep an eye on the quality of products associated with the Nintendo logo. If a particular video game was produced

only for Nintendo's console, being an *exclusive*, whoever wanted to play it should have bought a NES console first. If in the late 80s this strategy looked to be some way against anti-trust laws, today is one of the most lively strategy adopted by huge console producers slightly differently from the past: when a software house looks to be strategically competitive a console producer (like Sony or Microsoft) may decide to acquire the entire firm (maintaining intact the original team and the original name and logo) granting for itself an exclusive, high quality level and captivating production (examples may be software houses like Naughty Dog and Activision Blizzard, acquires respectively by Sony and Microsoft).

Nevertheless, already in the early 80s the production of video games was lively on two different levels. If the arcades were living their golden age in that decade, with a production characterized by almost endless, score-driven, and extremely challenging and difficult games (oriented specifically to maximize profits with shorts play-time for a quarter), home consoles were starting to run larger (but limited), story-driven, more or less challenging and difficult games: the higher price was compensated by the fact that it was an unique payment in exchange of a game to be played at home anytime, too long to be played in an arcade in a few hours. If in the 80s this kind of games need between 23 and 89 hours of gameplay to be completed (Kastre, 1992), todays production may require from 60 to more than 200 hours of gameplay. But how designer and producers were able to create such games so different from the kind of *Pong* and *Space Invader*?

Wether we are talking about cabinets or home consoles, we are talking about computers designed and programmed in order to run specific programs that are converted into interactive and manipulable moving images through electricity and specific devices necessary to the entire process of playing, as for example CPUs (Central Processing Units). In August 1974

eight design engineers got a job at MOS Technology, a semiconductor design and fabrication company. By 1975 the engineers team designed and developed a small microprocessor unite, inexpensive and easy to program, called MOS6502. This was the same CPU installed in Apple Is and IIs home computers, as well in Commodore PETs and 64s, and, additionally, in Atari 2600 consoles and in Nintendo's NES. And the same CPU was the base for ARM microprocessors designed for iPhones, Blackberry and Android smartphones (Swaminathan, 2011). This one of MOS technology is a perfect example of how the industry worked back then and how it works even today (with the only exception of Apple that applied a process of vertical integration in any aspect of its production) and clearly highlights how different industries are interconnected on different levels. Video games industry is connected and somehow depend on other specialized industries that on their side are not specifically oriented towards gaming, but are in charge of the production of components that are applied in many other fields, like cinema, non-ludic computers and music.

If in 1976 Jerry Lawson invented the cartridge technology specifically for gaming, after a decade another development in the field of data memory devices impacted not only video games industry: the introduction of CD-ROM (Compact Disc - Read-Only Memory) in 1985. Due to their nature, with a larger memory than floppy disks and cartridges and being less expensive than the latter, CD-ROMs were perfect for the distribution of video games software (and as well of non-ludic softwares), but in general for different entertainment media considering how this technology impacted on the distribution channels of music and cinema industries. By today things changed enormously since the first games that adopted a vectorial graphic, with the adoption of modern tools such as ray tracing and shaders that permit to develop and create 3D worlds always more realistic and detailed;

and about character design a new technology contributes to an even more realistic effect: motion capture. This technique allows to create a digital version of performing live actors (an example may be 2020 *The Last Of Us Part II*). The last one is another example of a technological advancement adopted by video games industry and cinema one, within the animation sector.

Nevertheless, the bond between videogames and cinema is not only on a technological level. Before talking about the elements that ties each others, it is worthy to step back and to consider why video games have never been subjected to the same restrictions that, as an example, made pinballs banned from different US cities. Even if video games joined the amusement industry as a leisure activity, it was soon consider a form of entertainment. Obviously, USA's local governments and citizens noticed the growing impact of the new product on the young audience, and manifested concerns about it. This was the so called "moral panic", that was mainly related to violence in games, as for example *Death Race* (Kocurek, 2015) and *Mortal Kombat* (Salvador, 2013), and more than once there have been an attempt to prohibit the production or distribution of this kind of games, especially after studies that proved a correlation between games and aggressive behavior (Collier et al., 2008) - not without a little hypocrisy since U.S. Army distributed a video game on its website, *America's Army,* to make propaganda and convince young boys and girls to join the army during Afghanistan conflicts (Anonymous, 2004). The absence of laws and prohibitions on one hand, and the use of a game as a propagandistic tool on the other one, reveal a fundamental aspect of video games. As the Supreme Court stated, these artifacts are protected by the First Amendment: video games are part of what is protected as freedom of speech, also because they are a medium, as cinema, literature, and music (Collier at al., 2008).

This aspect, the possibility to display stories and to be narrative, deeply connect video games with cinema, and since was possible to create more complex games, it was possible also to turn movies into them, making movies themselves playable. If since 80s and 90s the transposition was from movies to games, in the last years there are several video games that have been turned into movies or tv series, as for example *Uncharted* (2022), based on the homonymous games series, or the coming soon HBO series *The Last Of Us*. In both the scenarios turning a medium into another it is not about to remake the same product in a different way, but it is a new way to extend narratives beyond the boundaries of a medium. As an example, the *Uncharted* movie shows the same characters of the games involved in a completely new adventure, and since it displays an anterior and unseen moment of the story the final product is a good standalone, despite a few discrepancies. On the other hand to turn movies into games have the power to let the audience experience a kind of world differently, presenting new parts of the stories or letting the players explore the scenarios they loved in movie theaters, or also making the users feel part of and involved in the most cathartic and dramatic scenes (Hall, 2011). An example of this kind may be the first experience of Parker Brothers, a toy and game producer (such as *Monopoly*) in the video game industry in 1982. When the company decided to develop their own games for home consoles, Parker Bothers decided to develop their own cartridges for Atari and Intellivision, while licensing properties such as Star Wars. Then the first game produced by Parker Brothers happened to be also the first official licensing of a film-to-game property for home consoles. Given the limitations of the time and the impossibility to replicate the entire film's narrative, Parker Brothers *Star Wars: Empire Strikes Back* was built around the Empire's assault on the Rebel's stronghold on Hoth and great attention was devoted to the design of

the vehicles, in order to make them recognizable, and to the scale both of the characters and the landscapes behind. This way the player could took active part in a scene of the movie while listening the same (synthesized) music score trying to survive as long as he/she could. In this case, even if the Rebels are defeated in the movie, the game does not try to change the narrative established by the film, but is based on delaying its outcome as long as possible (Hall, 2018). The game eventually was a commercial success and was released in 1982 for Atari and in 1983 for Intellivision, and was the first of Star Wars four titles developed by Parker Brothers, while in 1990 LucasArts gained enough experience to start producing franchised games by itself.

If high tech industries and creative industries as cinema, music and literature have been fundamental for the development of video games, technically and thematically, it is worthy to mention another industry that grew enormously in the last two decades and was lively also in the 80s and 90s, and that is tied to video games due to constant and reciprocal exchange of ideas and themes: the tabletop industry. The term tabletop is referred to all those analog games that require a table to play: in this definition fall games such as board games, card games, puzzle games, etc. The exchanges between video and table-top games may be of various nature for ideas, subjects and themes, but a real similarity between the two is represented by the game mechanics (Santin, 2021), i.e. the way is possible to play a game and how it works. The adoption of different and new game mechanics, once games could be more complex, is a fundamental aspect that permitted to the industry to keep an adequate level of novelty through the years. One of the best example is relation between the tabletop fantasy game *Dungeons & Dragons* (abbreviated *D&D*) and video games. Designed by TSR in 1974, *D&D* is a pioneering fantasy adventure

roleplaying game that required to be played with pencil and paper sheets, dices and the manuals, one for the Master and one for the players. The Master is the narrator who creates the story and challenges the players, who usually constitute a party, for the entire game time. The players have to create and design their own character in every aspect: name, gender, age, race, class, abilities (divided into six different categories) and equipment. The players impersonate their characters for the duration of the game and decide every their action through the exploration of the world, relations to other characters (both of the party or NPC - *non playing characters*). The success or failure of players' every action depends on the results of different kind of dices and part of the game is also to learn to react properly if the results are negative. Through the game time players may level up, gaining new points to be spent on the abilities, in order to increase the chance of success for every roll of dice: experience points are limited, to decide which ability should be improved requires strategy.

A game of this kind in early 90s was already been translated into 14 languages and sold in 44 countries, with over 2 million copies sold worldwide (Kastre, 1992). Video games have been deeply inspired by *D&D* and its game mechanics have been applied in many different ways. One example may be games such as the *Dark Souls* series, adventures fantasy games based on the exploration of the world while battling any sort of enemies. Fundamental of the game is the prior design of its own character defining name, gender, class (such as warrior, paladin, wizard, etc.) and abilities. Each class have specific abilities and differs deeply from each other, the gameplay changes sensibly depending on the chosen class. Through the game the players have the possibility to level up investing points on the most useful abilities, sacrificing a potential growth in those that are not necessary to the character. Another example of a game mechanic took from *D&D* is the

idea of turn-based battles. In a video game such as *Final Fantasy X* the player cannot control every action of the character (in this case pre-designed and not chose by the player) when it comes to battle the enemies, but the user can control the decisions of every member of the party (that in battle is composed by the character of the player and a maximum of three NPCs). Depending on different variables at the beginning of the battle the computer establish the order of each character and one by one the party and enemies have the chance to make the most appropriate action (in the case of *D&D* the order is decided by dices, each player rolls for him/herself and the Master rolls for the enemies' party, then establish a descendant order). In both the games this kind of battle requires strategy.

Other kind of video games as such for example *Genshin Impact* are based on the construction of a party, but the possibility of select this or that character depend on a random deck building process, a game mechanic similar to card games of the kind of *Magic*.

In the end, great part of the success of video games in the last fifty years depended on industrial management and strategies adopted since the very beginning and on a strong relation with other industries that were able to influence each other and keep a high level of novelty, and most of the time quality, of the products. Nevertheless, video games without players would be useless, so it is worthy to analyze also how video games have been socially and culturally accepted.

3.2. Walter Day's Twin Galaxies, masculinity, and competition

It has been already pointed out in the previous chapter how culture and values were shifting towards new dimensions in the early-70s America. With the space race, the computerization of working places, and the post-fordism, new value and skills were required on a daily basis and the slow but

constant spread of new technologies was pushing the society towards new unexplored frontiers. Video games are, indeed, sons of this slow process of new technical discoveries started in the post-war years. In this sense, despite their ludic and amusing purpose, video games were for the youngest generation a first approach to or interaction with computer technologies. Here is the bedrock of one of the rationales for parental suspect against the new games: there was a general consideration of video games to be a waste of time and a mischievous activity, and, in the case of arcades, that were considered spaces that made parental control easily avoidable, and an additional fear was the possibility for teenagers to pursue illegal activities (and eventually happened that some arcades closed because of drug dealing. Kocurek, 2012). The roots of these suspects and fears relied also on an unprecedented generational gap on the ground of computer, resulting in a values and knowledges conflict (Kocurek, 2015). As this may be seen as one narrative around what video games were and what they could be within the society, it was not the only one. Another narrative related to technologies began sooner in the Twentieth century, as reported by Douglas (1989) describing the work of William J. Willenborg, a radio amateur particularly skilled in technology who built his own broadcasting station and defined as “a man of science”. And it was this particular skill in science a new value that was entering into the imagery of manhood, making the ability of being able to use effortless new technologies something to be mastered.

In the time when video games were introduced in arcades and home’s living room, a shift from computers as tools towards computers as culture (Slovin, 2001) began, and the efforts of one man were about to create a new “positive” narrative of video gaming and gamers: Walter Day, an entrepreneur who, before opening his two arcades, Twin Galaxies, in Kirksville, Minnesota, and Ottumwa, Iowa, travelled through America selling

historical newspapers. Particularly two projects of his made Ottumwa the world capital of video games (despite the production was mostly locate in California and Chicago).

The first one is the photo shoot he had settled in 1982 in the city with the magazine *Life* in occasion of the publication of the issue *Year in Pictures*. Walter Day managed to have a team of *Life* with the photographer Enrico Ferorelli and with the American top players of the time, those who registered the highest scores on their favorite coin-ops.

Figure 1 - Enrico Ferorelli, 1982, photograph in Ottumwa appeared in *Life* magazine's 1982 *Year in Pictures* issue.

The picture was settled in Ottumwa's downtown main street, in the background it is possible to see an almost empty road with a few cars in the distance. At the sides of the street stores and the movie theater are visible. In the front of the picture there are sixteen boys split in two lines, they are all young, white males standing behind six cabinets, that are the real center of

the picture being the only cultural artifacts present. On the ground, in front of the machines there are five cheerleaders from the Ottumwa high school in a sort of victory pose, celebrating the “champions” gamers.

One interesting aspect of the image is that gamers are depicted as sports players side by side with the tools of their discipline, and the presence of the cheerleaders emphasizes this idea of a new kind of athletes, declined even in this case on a masculine level, with the girls as a tinsel to the celebration of these new top players. What Walter Day wanted to display, and that he stressed out in the interviews, is that these new young gamers were, as athletes, healthy (they did not drink, they did not smoke, they did not do drugs) and confident with new technologies and computers, and they are masters in what they do, and as baseballs or basketballs players they are ranked for their performances in gaming, to accomplish which they invested time, energy, and efforts with discipline (Kocurek, 2015). It is worthy to note that the mastery they acquired had to do with the idea of playing following the rules without cheating: before video games, pinball players had to master the electromechanical machine, they could hit it, slide it, even use a magnet to alter the trajectory of the metal ball, and this was a behavior accepted by the other players (machines operators did not, obviously), and also appreciated as a smart way to win against the machine and to maximize the score (Conn, 1981). In the case of video games, cheating is not tolerated, both by operators and by gamers around: mastering a video game has to be done playing according to the limits of the software, counting only on own skills. (DeLeon, 2014)

Higher scores meant better skills, and better skills meant being better than other players. Differently from pinball machines, that once rebooted did not keep memory of the previous scores, video games could save the best performances results, and gamers could put their name beside

their best score in order to make other players in the arcade aware of their ability, and their name would be visible until too many higher scores were registered. Given this element, video games were competitive, and Walter Day stressed out this aspect, and not only depicting his games as a new kind of American athlete, but inviting to the photo shoot (paying also for gamers' accommodations) the sixteen best gamers in America, defined by their scores.

This had a lot to do with the second project Day was carrying on, and that made Ottumwa the (competitive) video gaming world capital: the Twin Galaxies National Scoreboard. Before he decided to open his arcades and while he was traveling across the country selling historical newspapers, Day used to go to arcades in every city he happened to be, because he liked to play video games in his spare time. While playing, he kept record of the highest scores, longest games or perfect games of each machine. After the opening of the arcades, Day decided in February 1982 to make his scoreboard public as the Twin Galaxies National Scoreboard, launching it calling seven video games manufacturers - Midway, Nintendo, Stern, Atari, Exidy, Universal, and Williams - and the two publication *RePlay* and *Play Meter*. With this initiatives both Twin Galaxies and Day gained in fame. In three weeks the arcade employees were fielding interview requests almost daily, and by April players from countries different from the United States were calling. In the moment the board became the Twin Galaxies International Scoreboard (Kocurek, 2015). After that the arcade became the center of a global network based on a perpetual and deferred competition, a sort of race for fame and glory (from the perspective of a gamer) through quantifiable game successes, celebrated as baseball, football and basketball player statistics.

The idea of competition today is still alive and it is an aspect that permeates video gaming experience, even not considering the phenomenon of eSports, that are organized and managed as the same way as sportive competition such as Wimbledon tournament, generating million in revenues and attracting a huge number of gamers to watch several teams competing in video games such as *League of Legends* (Gough, 2022). Multi-player online games, both MMORPG (Massive Multiplayer Online Role Playing Games) and war games (or similar), in addition to regular players vs players competition, presents global scoreboards in which every player's score is recorded and automatically updated each time he/she plays. It is worthy to note, also, that competition in online games is really attractive to players, who have the chance to challenge not a computer or an AI, but a real person on the other side of a screen, that requires a major effort, but can guarantee also more enjoyment to the players (Liu et al., 2013). Furthermore, if almost very video game has today trophies to be achieved, in the case of single-player games they become a direct reference to the player's ability to master completely a software.

On one hand, through arcades video games became mostly competitive gaming (with the competition against both the software and the other players), and the efforts of Walter Day resulted in a conspicuous contribution to the emergence of a positive narrative of gamers and video games. These were some elements that contributed to the global success of video games industry, but, on the other hand, other roots have to be found on different (and most peaceful) grounds.

3.3. Spaces, socialization, and cultural participation: new paradigms

The passage from arcades to home consoles, or to a more general private dimension of the consumption of video ludic artifacts (to include both computer games and console ones), happened gradually, and the two dimensions coexisted during 80s. The preference for home playing could be driven by the fears of the parents towards arcade spaces, preferring to buy a home console for their children; on the other hand the development of new technologies, and consequently of home consoles, gave the possibility to developers and software houses to create way more complex and longer video games, games that were not easily installable in an arcade, and not made to be played quarter by quarter.

But why the preference fell on home consoles, if boys could play also outside their houses? It is idea of the general public that video games generated a loss of interest in kids about playing *en plein air*, preferring a closed private space to an open and communitarian one. Nevertheless, comparing his boyhood with his son's one, Henry Jenkins (1998) inverted this cause-effect relation, highlighting other elements that made video games so appealing. Remembering his boyhood, Jenkins talks about the way he used to play outside with his friends, inventing stories, interpreting characters, fighting, exploring spaces such as the little wood nearby his place, mostly escaping parental control while making his own experiences and building a personality that eventually would have been already developed when the time of entrance in the adult society would have come. What about his son? He grew up playing video games in his room, exploring imaginary worlds and interpreting, through interaction, different characters each time, fighting monsters and making alliances with NPCs (Non Playing Characters), being part each time of a new story, acquiring his individuality within the comfortable four walls of his private space, out of the guarding

sight of his parents. Interesting in this depiction is the fact that the son did not preferred video games rather than playing outside, but it was one of the few choices left to experience individually values and emotions. The green spaces Jenkins used to play in did not exist anymore, replaced by apartments complexes, buildings, and concrete; society changed and parents were not comfortable to let a child to play unguarded in a dangerous world.

Nevertheless, this depiction does not mean that the boyhood of the son was conducted individually and in complete isolation: video games could be an excuse to gathering, and they was something to talk about with friends at school, exchanging ideas, thoughts, and advices about levels and moments of a game. A particular note should be about genders in this depiction, mostly referred to boys and boyhood, but about girlhood Jenkins noted how the way of experience, prior and after video games, was particularly conducted in private spaces and houses (Jenkins, 1998), while the disparity between male and female players looks to be less strong than one could think (Kocurek, 2015).

The concept of video games as a space for experience and experimentation it is not adopted only by Jenkins, but other researched how video games may affect individuals (Borowiecki and Prieto-Rodriguez, 2015; Johannes et al., 2021) and how video games are so involving. As an example, Robson and Meskin talk about video games as Self Involving Interactive Fiction, highlighting the aspect of participation and immersion a player feels while playing, and how he/she experiences a game being at the center of a world, and being responsible for the development of his/her own story (Robson and Meskin, 2016). Furthermore, Jeroen Jansz's studies are more focused on the form of experience in video games. Considering the idea of game as cultural expression as Caillois (1958) described it, and

reflecting upon the idea of “magic circle” as defined by Huizinga (1938), Jansz (2015) describe how, while playing different video games, players may learn and make personal experiences that would be useful in the daily life: they can learn how to cope in specific and different situations, and how to live and express emotions, with the possibility to make choices and live experiences and feelings that may be controversial in ordinary life (Jansz, 2005), or they can learn how to face fear and anger. It is worthy to note that the appealing of violent video games and playing them do not create a direct correspondence with the behavior of the gamer. There is an example that is also related to the moral panic about violence in video games: the Sandy Hook Elementary shooting in December 2012, in Connecticut. In that occasion 20-years-old Adam Lanza killed more than twenty people (between children and school staff), and soon after the shooting video games were on the spotlight: some news outlets referred that Lanza was obsessed with violent video games; the National Rifle Association attempted to shift the national conversation to video games; some politicians, like Jay Rockefeller, linked the shooting to violent movies and video games. Eventually, Lanza had played many video games, non of which was a violent one (Ferguson, 2014). Indeed, gamers can experience through video games, and they can learn within the boundaries of a closed system that does not affect the world outside, being isolated in an own time and space, that sort of digital magic circle that a video game is.

Even in this case that sees video games as a space of experience and experimentation, it is never described as a process conducted completely individually and in isolation, but socialization it is an important aspect of the idea of playing, even considering that sort of peer to peer exchange that Jenkins (1998) described. Playing video games is almost never a solitary practice, but it implies socialization with other people, may it

be with friends and other attendants to the arcade, friends at school after and before a gaming sessions, as an indirect socialization, or may it be via LAN (Local Area Network) or online: a communication between players is present. Playing with or against other players resulted to be particularly appealing, mostly for male teenagers, both in order to prove the strength against other peers, and also as a form of competitions and socialization (Jansz, 2005b).

Even if violent video games are appealing mostly for females, an audience of that kind exist for those games. In general, video games are never either for a gender or the other, but looks to be true that a genre may be more appealing to males or to females. A god game such *The Sims*, based mostly on the customization of an own house while managing the life of the characters, looks to be more appealing for girls than for boys, but gender boundaries are much grayer in this sense (Vosmeer, 2015).

Nevertheless, a game like *The Sims* has an important role on another side that had been relevant in the development of video gaming as an industry. An important aspect of the game is the possibility to customize different elements like clothes, furnitures, wallpapers, etc. and the player can, if he/she wants, to share the custom within a network, which is integrated in the more recent versions of the game, and let other people download and use it as well (Sihvonen, 2011). To participate and to share this way invest the gamer with a sort of co-creating or co-producing power that makes the user feel more involved in the game, but it represents a strategy for developers and software houses as well (Werning, 2019): in a video game like *The Sims*, this practice consent to Electronic Arts, the game's parent company, to have more game items designed for free by its users. But there are other cases in which to give the possibility to the user to

modify a variable part of the game resulted an industrial strategy fore developers, and a powerful creative and participatory aspect for gamers.

In order to understand how relevant is today this co-creating aspect of video games, we have to step back to 1993 and to the phenomenon of *modding*. What is it? It is the practice of modify some elements of a game, and to make it playable to other users. Typically, there are two different types of mods, that are: *partial conversion mods*, and *total conversion mods*. Those of the first kind "add new content to the underlying game and refer to mere game variations and extensions" and "are created by altering and adding to a game's media files, resulting in changed game scenery and music as well as modified or additional game characters and objects" (Arakji and Lang, 2007, p. 199) and they "may alternatively manipulate a game's map files, which control character and object positions and movement, allowing the modification of existing playing levels or the addition of new ones" (Arakji and Lang, 2007, p. 199), while those of the second "create entirely new games" and "consist of the concurrent modification of media and map files, as well as other game functionalities, to create complete departures from the original game theme" presenting "new, derivative game products" (Arakji and Lang, 2007, p. 199). Both the types of mods are freely distributed on Internet through online communities and forums in which computer games players talk and exchange information, advices and opinions (home console games do not allow mods). When idSoftware released *Wolfenstein 3D* and *Doom*, respectively in 1992 and 1993, the shareware distribution, which permit to players to try the games before buying them, was not the only innovative and unprecedented idea the software house adopted: it was also the first firm that let players access to the game codes, allowing the creation of mods.

But that case that more than others displays how mods may be mutually advantageous for developers and users is from 1998 and 1999, when Valve released *Half-Life*, and then *Counter Strike* happened. The first one is a single-player FPS (First Person Shooter) game, and, after its release, Valve decided to partially open the game code encouraging the creation of mods. The 80% of the code was available (the other 20% was the game engine) to be modified freely (Arakji and Lang, 2007). *Counter Strike*, developed by Minch "Gooseman" Lee and Jess Cliffe was a mod for *Half-Life* that turned the original game in a multi-player FPS one. The mod was such a success that it became more popular than the original, and, eventually, Valve acquired the game and distributed it as a standalone (Morris, 2007). Having a mod like *Counter Strike* was extremely advantageous for Valve both because whoever wants to play the alternative version needed to buy *Half-Life* first and because they outsourced a new game and invested on it after it has already been tested in the market (Arakji and Lang, 2007). On the other side *Counter-Strike* developers had the possibility to create something new and to share it with their peers guided by their passion for gaming, eventually having commercial success.

Another interesting phenomenon about the participatory culture in video games and the creation of new contents is the one of *machinima*, i.e. the creation of videos or movies from a video game, through the use of video editor tools and virtual cameras that the game itself allows to access to. One example may be the series of machinimas of *The Sims 2* produced by TheSidDog. Being a god game in which the player has to control characters that mostly act guided by their own priorities, the creation of such movies had a lot to deal with the ability to capture the right moment in the right time with a trained directors eye. The author posts his movies on a fan site owned by Electronic Art that host a large community of the game's fan. After internet

and the development of new communication technologies online communities grew in number: digital spaces where gamer from all over the world can virtually meet and talk, share thoughts, advices, original contents created by them as mods and machinimas, with no need to ask for permission and with no fear of legal consequences: as a matter of fact, developers and software houses encourage the users to create original contents out of their video games, differently from Cinema and Music that keep an eye of control and do not allow modifications to their products as freely as video games industry. Another phenomenon generated by gaming that is worthy to briefly quote is the one related to the practice of watching other people play on the internet: players that record themselves or stream while they play any kind of game. Social networks like YouTube first, and then Twitch these days, contribute to the creation of new contents while strengthening online global communities, that through video games and socialization, in and out of games, create new meanings and values out of games, out of the choices they make while playing, and out of their social behavior while confronting other players (Burwell, 2017).

3.4. Beyond Magic Circles: todays gaming particularities

A few last considerations about the success of video games and their global spread in the new millennium is related to a couple more recent game typologies. One is represented by social and mobile games, the other is the one defined *serious games*. Regarding social and mobile games their story began back in 1998 when Nokia installed the game *Snake* in their mobile phones, using a process of gamification useful to get the user used to the new phone, similar to the one adopted by Microsoft with Windows95 that had some card games installed (Viola, 2011). With the spread of new technologies mobile games grew in complexity and number. Social games

are on the other hand deeply connected to the spread of Facebook, that started to propose products, such as *FarmVille*, that based the in-game success on the amount of friends a player could count on while requesting resources and help to them.

Those kind of games are generally F2P (Free to Play) and financed by several advertisement breaks within the game, that may be avoid by acquiring the pro-version of the software. Another particularity of these games is the amount of in-game purchases that are allowed and proposed to the player: this way it is possible to play for free, but to progress faster requires the additional purchase of in-game items, with a mechanism called P2W (Pay to Win) that may generate billion in revenues (Macciò, 2021). An aspect shared by both mobile and social games is that the concept of the magic circle, highlighted by Jansz (2015) in video games, is blurred or absent: to have a game right in the pocket allows users to play whenever they want, wherever they are, letting that isolation in time and space disappear, and substituted by a perpetual state of play.

The category of serious games is different and identifies those games designed with clear didactic intentions, or related to the development of specific skills. The examples in this categories may be different. Di Stefano (2011) quoted within this typology Nintendo's video games such as the *Brain Training* series and *Art Academy*, actually adopted by museums such as Rome's MAXXI and Rovereto's Mart. Other kinds of serious games may be those that are designed to prepare to a particular job, through the simulation of events that will require a specific training, as for example *Triage Training*, developed by TruSim in 2008: the game was adopted to develop the skills of paramedics in case of tremendous accidents (Macciò, 2020).

Different considerations brought to think about how commercial video games may be useful to classic in school didactic experiences and there are several researches and studies as, to quote a few example, *Our Princess is in another castle* (Young et al., 2012) that inquire for which disciplines video games may be useful, or Burwell's *Game Changers* (2017). This kind of idea looks to make sense, even considering that video games have different characteristics that make them appealing, interesting and fun: *attraction*, *interaction* and *experience* (Viola and Idone Cassone, 2017). Furthermore, facing difficulties and obstacles in a game makes the player wanting to master a level, investing time and efforts despite failures, while the same attitude is absent when it comes to face difficulties in school subjects (Jenkins, 2005b).

A particular study examined the effects produced by the use of the game *Civilization IV* to teach historical theory, with positive results. Given the fact that the game simulates past events such as battles and empire expansions, it was a good tool that, beside classical teaching methods, helped students understand how and why story evolved following specific paths (Wainwright, 2014).

In conclusion, video games are a fascinating and appealing medium that may be used in many different ways and may serve different purposes. They are an entertainment form but also powerful cultural goods, capable of create communities and to stimulate creativity and curiosity (Borowiecki and Prieto-Rodriguez, 2015) and cultural participation within the industry development itself. Far from being an exhaustive analysis of video gaming world, the past chapter attempted to highlights few narratives that participated in global success of video games.

4. Italy's past and present gaming

Once described, within the previous chapters, where do video games come from and how they evolved over time, the last chapter of this thesis project will investigate the gaming panorama in Italy, with the attempt to understand how this country participated and participate today in this global success of video games. In order to do so, the analysis will take into consideration the production and distribution of pinballs machine (that in Italy are called "flippers") and then of video games since the '70s till today's *status quo*.

4.1. Pinballs in Italy

The first pinballs arrived in Italy after the Second World War, within the first years of the 50s. For almost a decade the pinball machines on Italian lands were those imported from other countries, such as Americans Gottlieb and Williams's coin-operated devices, and were mostly known as "*flipper a milione*", because of the scoreboard that only registered the scores from 1.000, to 10.000 and multiples until the million, as for example 1958 Gottlieb's *Rocket Ship* that presented a maximum score of 7 million points. What was more fascinating of the first pinballs in Italy were the colored and bright window stickers that were part of the electromechanical scoreboard. There was not any kind of arcade or devoted space in Italy for pinballs and they were commonly present in bars (which made these machines perceived, in Italy, as bar games). Almost none of the imported machines was meant to have pay-out mechanisms and prizes could be limited to free games instead of coins or tickets.

Things started to change between 1958 and 1965 when new anti-gambling laws in Italy imposed strict limitations to the kind of games allowed

since any form of compensation for a victory was prohibited, with a constant control by the police (Carabinieri, Guardie di Finanza, etc.) both on the conformity of the machines and on the documentation and permissions that an operator needed in order to have a coin operated device available to public fruition. When in 1965 a new law defined which games were allowed, every machines had to expose a warrant affirming that the purpose of the device was uniquely leisure and amusement (*svago e divertimento*) and that there would not be any kind of prize, free games included. In the end, machines were prohibited to minors, and the age of the players had to be verified and granted by operators; furthermore, the name flipper had to be substituted by the more comfortable "*biliardino elettrico*" (Missiroli, 2020).

If on one hand these new limitations made difficult the import of pinball machines from other countries due to the lack of devices conform to the Italian legislation, on the other hand it had been a powerful input to the formation of a national industry that could create *ad hoc* devices and satisfy the demand of the most popular amusement machine between the 60s and the 80s. The Italian Pinball DataBase, curated by the Tilt Association, gives us many names of producers that were active in those years, and even if their list is uncompleted and can not provide even the location of some of them, it is a useful tool to have a general idea of the industry of that period.

Table 3 - Pinballs Italian Producers

Producers name	Province	Producers name	Province
Bell Games	(BO)	Pasini	(BO)
C.E.A.	(BO)	Pinball Shop	(BO)
EuroPlay	(BO)	Playmec	(BO)
GGB	(BO)	RMG	(BO)
Lori	(BO)	Romagnoli	(BO)
Mr. Game	(BO)	Zaccaria	(BO)
BEM	(MI)	DAMA	(MI)

Producers name	Province	Producers name	Province
Bensa	(MI)	EAGLE	(MI)
Centralmatic Lombardia	(MI)	MD	(MI)
Elettronolo	(FI)	Artigiana Ricambi	(FI)
Mondial Matic	(FI)	——	——
AMI	(TO)	Sidam/Sipem	(TO)
RIFLIP	(TO)	——	——
Bontempi	(RM)	Manilamatic	(RM)
Dalla Pria/ABM Electronics	(PD)	Ripepi	(ME)
Mambelli	(FC)	IDI	(AL)
CEFF	(PC)	Model Racing	(AN)
Nordamatic	(VR)	Tecnoplay	(SM)
Lodola	(MS)	——	——
AD	(??)	Ferma	(??)
Apple Time	(??)	G-Braun	(??)
ELBOS	(??)	Italiana Biliardi	(??)
Emmepi	(??)	P.C.	(??)

Producers names marked by the asterisk * and written in bold are present in both tables 3 and 4.
Producers have been organized by Province in case of more than one producer.

Table 3 above summarizes data collected on the Italian Pinball DataBase (http://www.tilt.it/flipper_pinball/ipdb/) and matched with the data collected on Italian Coin-op Zone whenever a firm produced pinballs besides arcade video games. From the data it looks that at least 43 different pinball producers were active, mostly in the North area of Italy with one exception in the Southern regions (Ripepi in Messina). The province of Bologna was the most populated counting at least 12 different producers, followed by the province of Milan with at least 6, and the province of Torino with at least 3. The IPDB lists, in addition, 8 producers, whose location is uncertain and difficult to verify and 34 additional pinball machines, whose producer is uncertain and not reported on the device. Such data may confirm the

existence of a high demand of pinballs between the 60s and the 70s, and the firms was probably small, since it was common practice for producers to be in charge also of repairs and of revenues recovery directly from the operators, as emerge from Paolo Missiroli's (2020) statement. As for American firms, Italian producers did not devoted the entire production to pinball machines, but were involved also in production of other coin operated machines such as slot-machines, juke-boxes and vending machines. Nevertheless, an industry that produced pinball machines existed in the past, while the production today appears very limited or non-present: only one producer looks to be active, Altivo Flipper (https://www.altivo.it), and it distribute digital pinball machines, with a screen that replace the physical game table, and they are registered as video games.

4.2. Arcades in Italy

If on one hand pinballs arrived in Italy two decades later after their first invention in the 30s, on the other hand the first coin operated video games were imported already in the 70s, whit a delay of few years after the first *Pong* was sold in the US. Being clearly machines with leisure and amusement purposes only without any kind of payout mechanisms or similar, these new artifacts in Italy never encountered problems with the national legislation, and, conversely, after few years arcades (in Italian "*sale giochi*") appeared in every city, especially between the 80s and the 90s, and were immediately populated by young boys and girls willing to play those new devices with their friends (Muccino, 2021). A success of this kind, that involved almost every Italian region, seems to be sustained by a good industry of that time, even if it was subdivided between firms that produced licensed games from other countries, companies that produced a few original titles, and those obscure groups that produced hacks and

unauthorized copies of other games (both Italians and foreign). Italian Coin-Op Videogames Zone, curated also by the Tilt Association, offers many data on the actors involved in the new market between the 70s and the 90s.

Table 4 - Coin-op Arcades Italian Producers and Distributors

Producers name	Province	Producers name	Province
ABM	(MI)	Electronic Devices	(MI)
BEM*	(MI)	Gecas	(MI)
CD Express	(MI)	Olympia	(MI)
Datel	(MI)	Playmark	(MI)
Alberici	(BO)	RZ	(BO)
Bacchilega	(BO)	TBM	(BO)
I.G.R.	(BO)	Videotron	(BO)
Nat / Italgiochi	(BO)	**Zaccaria***	(BO)
Bertolino	(TO)	Rumiano	(TO)
CDA	(TO)	**Sidam/Sipem***	(TO)
Negro	(TO)	— —	— —
Bontempi*	(RM)	Fiberglass	(RM)
Digimatic	(RM)	**Manilamatic***	(RM)
Elettronolo	(FI)	SG	(FI)
Novarmatic	(FI)	— —	— —
AEA	(PD)	Playtronic	(PD)
Elmac	(PD)	— —	— —
Felaco	(NA)	Midcoin	(NA)
Amtec	(PR)	E.G.S.	(PU)
E.F.G.	(IM)	Domino	(RN)
Model Racing*	(AN)	Eurobed	(CZ)
Musik Box	(BS)	V.G.G.	(GE)
Impeuropex	(LT)	**IDI***	(AL)
Bellini	(??)	International Games	(??)
Dassì	(??)	Star Elettronica	(??)

Producers names marked by the asterisk * and written in bold are present in both tables 3 and 4.
Producers have been organized by Province in case of more than one producer.

Table 4 above summarizes data collected on the Italian Coin-Op Videogames Zone website (http://www.tilt.it/deb/) and matched with the data collected on the Italian Pinball DataBase whenever a firm produced arcade video games besides pinballs. From the data it looks that at least 47 different arcade video games producers or distributors were active between the 70s and the early 2000s, mostly in the North area of Italy, although the emergence of new firm in the rest of the Italian territory is increased in respect of pinball machines producers. The provinces of Bologna and Milano were the most populated counting at least 8 different produces each, followed by the province of Torino with at least 5, the province of Rome with at least 4, Firenze and Padova with 3 each, and Napoli with 2. The firms involved in the video games market in the same time span could were producers, distributors, or assemblers. Italian Coin-op Videogames Zone lists, in addition, 8 cabinets whose producers or assemblers are uncertain and difficult to verify, subdivided as follow: 1 original game with unknown producer; 5 unauthorized copies of videogames with unknown producers; 2 videogames with unknown assemblers. Such data may confirm the existence of a high demand of coin operated videogames, probably higher than pinballs in consideration of the rise of specific arcades devoted to the consumption of these artifacts, among others, between the 70s and the early 2000s. The presence of firm devoted only to the distribution or the assembly of the cabinets may led to think that the industry of Italian coin-op video games was slightly more articulated and organized than the pinballs one. As for American firms, some elder Italian firms entered the market of video games while producing other coin operated machines, and others born as startups devoted only to the production of video games.

The Italian Coin-op Videogames Zone presents additional data for almost each firm involved in the market:

Milano

Olympia was active already in the late 70s, but closed already in the 80s after few productions. BEM was already active in the production of pinball machines and failed in the 80s after one production, while Datel produced one game in the 80s and closed in the same decade. CD Express was active in the 90s and closed after 2000, producing also games for the computer Amiga CD32. Electronic Devices and Gecas were active in the 80s and still exist, the first producing slot machines under another name, and the latter is in another sector. Playmark was active since the 80s distributing copies and produced original videogames between 1993 and 1996, then produced video-slot machines until 2016. Similarly ABM produced two videogames in the 90s and then slot machines.

Bologna

Alberici produced mainly components for video games and is still active, while Bacchilega produced video games in the 80s but it is almost unknown. TBM was already active in the jukeboxes sector and produced videogames in the 70s, is still active and produces gambling video games, licensed Eurostar. I.G.R. was active since the 80s and produced various video games, then produced monitors until 2014. Nat produced few games in the 70s and became Italgiochi in 1985, today is closed. Zaccaria was already in the pinball machines market and produced videogames since 1978 until it has been acquired in 1988, today Zaccaria's brothers are active under

the name Tecnoplay, as distributors. Videotron and RZ are part of a ambiguous history of Romagnoli, pinball producers firm, that changed name at least five times: RZ looks to be one of them, and produced unauthorized copies in the 70s and probably changed name in Videotron right after, produced few games and changed name again in 1983.

Torino

Bertolino was active already in 1972 and had the exclusive for Atari products. Negro was active in the 90s as a distributor, while Rumiano was active in the 70s and 80s as assembler, although its name it has been found on a couple unauthorized copies. CDA was a distributor between the 70s and the 80s, then disappeared. Sidam/ Sipem was already in the pinball machines market and started producing unauthorized copies in 1978, then after legal controversies between 1983 and 2010 distributed licensed games, today is still active in the industrial ventilation sector.

Roma

Fiberglass was active in the 70s and produced one version of *Pong* and one of *Space Invaders*. Manilamatic produced pinball machines in the 70s and produced only wood cabinets in the video game sector. Bontempi produced mechanical games in the 70s and one video game, it was closed already in the 80s. Digimatic is defined as a group of "*cantinari della peggiore specie*", because of the production of only unauthorized copies, and a rumor would say they produced also unauthorized copies of other unauthorized copies, but it is not verified.

Firenze

SG is unknown, the name has been found on a couple of unauthorized copies. Elettronolo was already active in the pinball machines market since the 70s, produced original game and other licensed games, still active as video-slot machines producer. Novarmatic is active since the 90s and it is still active in the video games sector.

Padova

Playtronic was part of Della Pria group, produced nothing, and it has been closed. AEA was active in the 70s and it closed in the 80s. Elmac probably produced few copies, and today produces video-slot machines.

Napoli

Felaco was founded by Gaetano Felaco and Bruno De Georgio. The first was already a pioneer in the games distribution in Italy with Generalgame. The firm produced one game, designed by De Georgio, who then opened Midcoin in 1983, that produced four coin operated video games and one of the first CD jukeboxes. The company failed at the end of the 80s.

Various

Amtec, E.G.S., Model Racing, Musik Box all closed in the 80s. Amtec and Music Box produced unauthorized copies, while Model Racing was also in the pinball machines market. V.G.G. was active since the 70s producing unauthorized copies, and then licensed games between 1980 and 1984, when it closed. Domino, IDI, and

Eurobed were active more as distributors than producers: the first produced one original game, the second was in the pinball machines market, and the third produced licensed games. E.F.G. was active within the 70s and the 80s, it produced licensed games but on an original hardware. Impeuropex is a company that changed name many times, in the 70s and the 80s they were known as "*i re dei cantinari*" and produced only unauthorized copies of any possible game, even a 1993 gambling game. Today is New Impeuropex and it is a distributor of gambling machines.

Unknown province

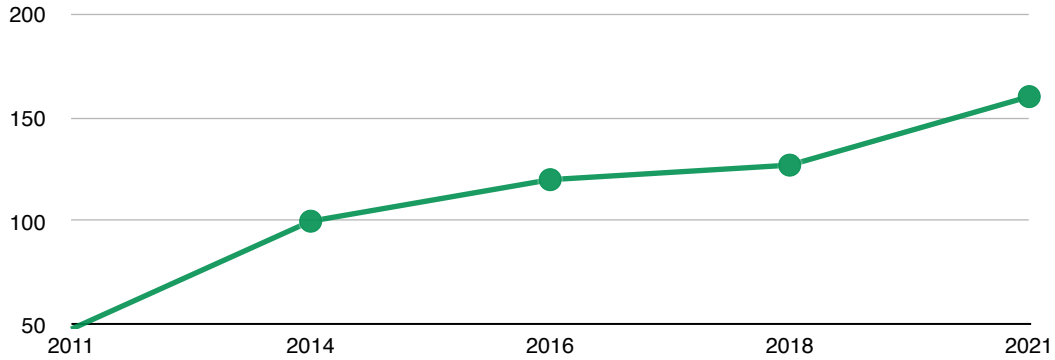
Dassì and Star Elettronica were distributors, Bellini probably produced copies and International Games was active between the 80s and the 90s, but there is a lack of information about it.

As results from the data and from Muccino (2021) and Serino's (2018) memories, there was an industry of video games arcade producers, assemblers and distributors. Once appeared in the 70s, coin operated video games had their Italian golden age between the 80s and the 90s, and then declined until early 2000s, being replaced by a larger diffusion of home consoles and personal computers that could run better games produced worldwide. Although *sale giochi* disappeared in the last twenty years and they left some traces behind them: if any coin operated arcade still exist there is the rare possibility to find it in some touristic locations or old hotels; while an adult version of old *sale giochi* is still present in every city: with its obscured windows and its closed door, a place of this kind hide the relationship between human beings and coin operated machines that's consumed inside: slot-machines rooms, as such Admirals.

4.3. Italy's present

As it is possible to observe, Italy proved itself active in response and participation both in the amusement industry and in the nascent video games one, finding personal answers in an already competitive market. Even if many companies involved in arcades failed or closed between late 90s and early 2000s, an industry for home consoles, computers, and mobile devices was slowly finding a new equilibrium. As of today, video games industry generated, globally, $180.3 billion in revenues at the end of 2021 (Wijman, 2021). At the date, Italian video games generated €2.243 billion in revenues between hardware and software in the same year (IIDEA, 2022b), as a result of an industry that is constantly growing in those years. If it is difficult to collect precise data for the years 2000-2010, thanks to the efforts of AESVI, *Associazione Editori Sviluppatori Videogiochi Itaiani* (Italian video games editors and developers association), founded in 2000 and that became IIDEA, Italian Interactive Digital Entertainment Association, in 2020, it is possible to collect specific and precise data for the years 2011-2021, through reports about both the state of the industry *per se* and the market with the audience, and through which is easier to acquire a clear idea of how Italy is participating in this creative and cultural industry.

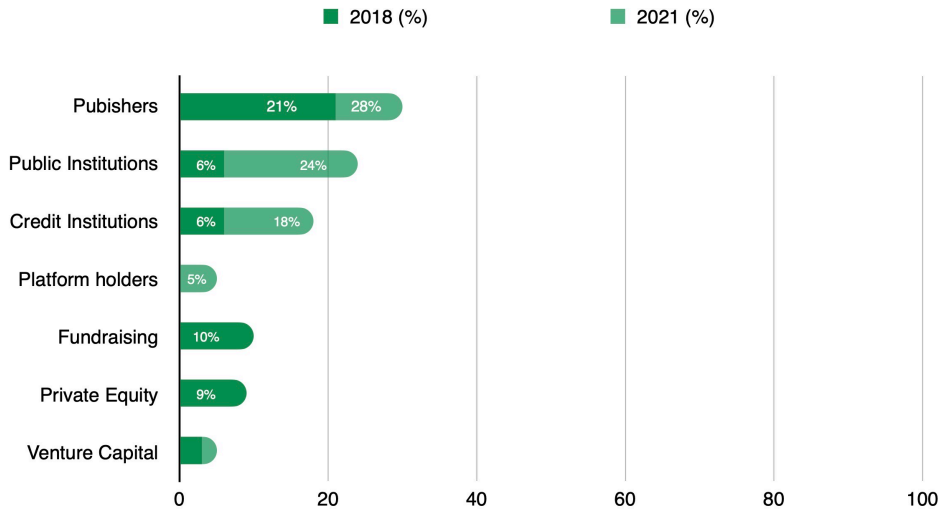
During the first decade of the twenty-first century is unclear how many was the companies in the video games industry, but in 2011 there were 48 active firms (AESVI, 2012) and within the last ten years the number raised to 160 (IIDEA, 2022), within which are comprised both Italian firms and Italian division of international ones, as for example Ubisoft Milan.



Graphic 3 - Firms (number) in Italian Video game Industry (Data collected from AESVI and IIDEA's censuses).

Initially a more sensible growth was expected for the years 2016 - 2018, due to the introduction of the law 14 November 2016, no. 220, about new incentives and tax credits for cinema and audiovisual discipline. Nevertheless, the ministerial decree with the applicative dispositions about video games industry did not follow the law until May 2021, and it introduced a tax credit of 25% up to one million euros of costs (Italy, 2021). This represents an adequate State contribution to the industry, even if IIDEA expectations for the future are about a tax credit of 30% up to two million euros (IIDEA 2022). Another form of support to the industry is the First Playable Found, introduced by the MISE (*Ministero dello Sviluppo Economico* - Minister for economic development), that offer an allocation of €4 million to cover the 50% of production costs of a firm with contributions comprised between €10.000 and €200.000 (MISE, 2022). The contribution of the State to the growth of the video games industry is still fundamental: even considering that the 93% of the firms could sustain themselves independently, a development in the industry in order to make Italy competitive on a global market would be more effective with the contributions of other private and public supporters. The potential growth would benefit both the industry and the dimension of the single firms, since

companies with more then 20 employees represent the 19% of the industry, while the majority of the firms can count on 6 to 10 (26%) or 3 to 5 (24%) employees, and firms composed by individuals or two people represent the 16%. In the last three years more attention to the Italian video ludic sector brought changes that are symptoms of a constant growth of an industry that is being recognized fundamental to the innovation and an investment attractors. Graphic 4 reports the data for 2018 and 2021, collected on 2019 AESVI's report and 2022 IIDEA's report, that describe these changes.



Graphic 4 - Firms financing sources in 2018 and 2021. The percentage is referred each time to every firm, in a context of multiple financing sources.

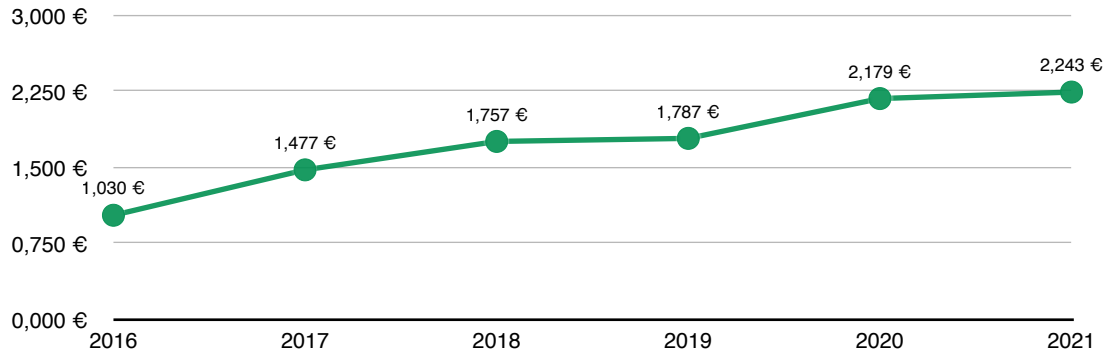
Aside from the 93% of the firms that mostly utilize their own resources (and that in 2018 were the 88%), the companies that benefited of publishers support increased from 21% to 28%, demonstrating that publishers are more and more having interest in promote and invest on valuable products, both nationally and internationally. The most significant changes are registered on those who benefitted of public and credit institutions: both the items increased from the 6%, respectively to 24% and

18%. Fundraising and private equity did not change, remaining respectively on 10% and 9%, while 2% more of the firms benefitted from venture capital investments (from 3% to 5%). Financial support by platform holders was not registered in 2018, but was a help for the 5% of the firms in 2021.

The territorial distribution of the developers is particular in the case of video games. It presents similarities with the distribution seen in the cases of pinball machines producers and coin operated video games producers, as for example the majority of the firms are in the north of Italy (in particular in Lombardia), but it is also different because of a major presence of firms in centre and south regions. In 2014 the 30% of the developers were in Lombardia, the 10% in Lazio and 14% were equally present in Sicilia and Campania, while in Piemonte there was the 12% of the firms (AESVI, 2015). In 2016 new firms were active in different part of Italy, such as Liguria and Veneto. In 2021 the three most active regions had been Lombardia, Lazio and Emilia Romagna, but it is not reported an indicative amount. AESVI's 2018 report is the only one that describes a specific quantity, instead of a percentage, with Lombardia, Lazio and Emilia Romagna on the podium, respectively with 41, 18, and 13 firms active in the region. Other regions that have data reported are Piemonte, Toscana, Campania and Sicilia (AESVI, 2019).

The composition of the firms presents a relatively young environments with the majority of the professionals in the industry of ages between 30 and 35 years (43%) and people between 25 and 29 years old are the second most present groups (29%). Professionals older than 36 years old represents the 21% of the total. Almost none of the firms in the last ten years closed, considering that the majority (38%) of them is opened since more than seven years, and the 35% since a period between 4 and 7 years. A general growth is registered every year, in terms of quality and

quantity of firms, and in terms of revenues. As emerged from the reports dedicated to the market from 2016 to 2021, every year the industry registered better revenues, as displayed in the graphic below.



Graphic 5 - Revenues (€ Bl) from 2016 to 2021 (Data collected from AESVI and IIDEA's market reports).

In general the Italian video games industry is growing, slower than other countries as USA, United Kingdom, or France, but it is growing constantly and achieving several goals through times. As stated in reports and censuses, the Italian video games industry is getting closer to the "Made in Italy" brand (examples of which are brand such as Ferrari, Pirelli and Barilla), that is defined in global ranks of brands and firms by characteristics such as quality of the products, originality and coherence, that are seen worldwide as a reflection of Italian heritage, culture and life style, which posit Italy as first country in the world, while it is far from the top positions for aspects such as bureaucracy and labour market ("La percezione dell'Italia e del made in Italy nel mondo", 2021). Examples of how Italian video games industry is adapting the "made in Italy" are the genres of video games produced and their characteristics: the three main genres in Italy in 2021 were *action/adventure*, *arcade*, and *puzzle*, while mainstream genres such as *shoot 'em up games*, and *beat 'em up* are less produced. Characteristics

of these kind of games are the originality in stories and a high quality and authentic game design, that made international games such as *Close to the sun*, developed by Storm in a Tea Cup. A mention goes to the production of *racing games* that are an excellence in the Italian panorama: on one hand there is *Milestone*, born in 1994 and that produces *MotoGP* and *Monster's SuperCross*, among others; on the other hand there are software houses such as Kunos Simulazioni and RaceWard, the first famous for its hyperrealistic car-racing games (*Assetto Corsa*), adopted even by F1 pilots as training, and the latter famous for the motorbike-racing game *Rims*, that made the French publisher Nacon interested in the studio. What is expected for the future is that the industry will keep growing, investing resources on the nurture and cultivation of Italian talents while attracting professionals from other countries, sustained by policies that could support the development of new IPs and that could make Italy even more attractive for other countries (IIDEA, 2022).

At the end of this chapter, it is worthy to briefly highlight the main characteristics of the Italian video games audience and how the participation and co-creation of contents is present. Players in 2021 in Italy are the 35% percent of the total population aged between 6 years old and 64 years old, for about 15.5 million. The majority of the players are between 45 and 64 years old, followed by those that are between 15 and 24 years old, and thirds those aged between 25 and 34. The 56% of gamers are males, while the other 44% is female. The majority of the female players rather play games on smart devices (smartphones and tablets), though they plays also on consoles and computers. Males look to be equally distributed among the three typologies. Considering all the devices, the average time spent playing by gamers is about 8,7 hours per week. Differently from industry revenues, audiences are diminishing. In 2016 the gamers were about 25 million, and

declined the year after to 17 million, while the female gamers passed from 50% in 2016 to the 44% of the last two years.

In terms of participation and co-creation of contents, the Italian audience is active both nationally and internationally. There are several communities on social networks such as Instagram, created by groups of young gamers that share their passion with peers through the creation of contents through virtual photography and news about the market, as for example the NCR (*Nasce, Cresce, Respawna*) page. Content creators of the kind are often also YouTubers or Twitch streamers, that share their live game sessions on internet and play while chatting with their audience. Streamers in Italy cover both nation and international audience: on a national level an example are the streamers PrattQuello and FortuTheGamer, hired by Playstation Italia for its Twitch channel; internationally there are several streamers who speak English and catch an international audience, as for example Fins_Plays, and few gained a discrete success, such as Blurr who entered the Twitch Top 100 in 2022.

Another example of an Italian content creator who has an international audience and more than half a million subscribers to his YouTube channel is ThePruld, pseudonym of Paride Cardinali: with 109.767.324 total views since he opened the channel in 2007, he realized comic videos, among others, inspired by the series of games *Dark Souls* (that he called misadventures), redrawing digitally the characters and animating them, creating storylines based on games lore or alternative narrations and giving new shapes to the iconic figures that are present in the original stories, creating dialogues based on the attitudes of the various characters. The comic aspects of the videos is always present, both for those who never played a game of the series and for those who already

know the original characters (https://www.youtube.com/channel/UCTJlnu-7PDDsWA26xcWW6KA).

Figure 2 - Three frames from ThePruld, 2018, *Artorias*.

In conclusion, Italy managed to keep up with international innovations in the amusement industry and in the early video games one, when coin operated machines (both pinballs and arcade video games) were imported for the first time. After the decline of arcades, with the exception of few software houses such as Milestone, the industry for home consoles and computers was not ready enough to keep developing new products in line with the international market, resulting in less than fifty firms, between publishers and developers, in 2011. In the last eleven years the number of the firms, as well their dimension and quality of productions, increased sensibly and signals of a reprise for the Italian panorama are tangible, with a positive growth through the years, and a kind of production that moved from the mobile market to consoles and computers one and innovations in the virtual and augmented reality sector, with video games sold nationally and internationally, mostly on the digital markets such as PlayStation Store and Steam. Problems to the development of the industry are, according to IIDEA, a bureaucracy and a financial system too slow that do not encourage

entrepreneurship in technological sectors, and for video games an extremely little support by the public sector, that in other countries are more supportive as for example United Kingdom with the implementation of the UK Games Fund and Germany with more effective tax credits and fundings for the national sector, or as France that applied similar support measures already in 2007. Undoubtedly, the support of the public sector to the development of the video games industry is necessary, especially for young startups that have to remain in the realm of independent productions because of the impossibility to sustain costs for the production of games for a larger market, and the difficulty in overcoming the high costs for technologies and developments within a highly competitive market. Another problematic aspect, not quoted by IIDEA but deducible by the same reports, is the fact that the Italian production is little or no known by the national audience: the best seller games in Italy are produced in other countries (such as *Grand Theft Auto V* and *The Last of Us Part II*), and no Italian titles are in the top ten, while it is rare to hear about Italian firms new releases within communities and magazines. It is possible that, given these results, another obstacle to an ulterior growth for the Italian industry is the poor effectiveness of marketing and advertising within national borders. Nevertheless, if firms will be able in the future to overcome these hindrances, the idea of an Italy as one relevant actor in the global panorama of video games is more real than few years ago.

Conclusions

At the conclusion of the present thesis project, answers to the main queries posed within the research have been found: did a “gaming” industry before video games exist? And why and how video game became, in fifty years, a synonymous of gaming? As it has been observed, since the very beginning of their story video games developed themselves following two (at least, at first) different paths simultaneously. Since the very beginning Baer’s invention was a home console, while the first success of video games was marked by the fast spread of coin operated machines that had almost immediately their golden age within arcades, while the idea of a home console production have been never abandoned by the industry and between the 80s and the 90s the main consumption space shifted from the public to the private one, due to constant development in hardwares and in softwares’ complexity and duration.

Nevertheless, video games could not have such a success if it were not a pre existent industry and coherent and analogue social, cultural and economic contexts. The American amusement industry was the closest to the concept of coin operated video games: from gambling to pinballs, the audience of the 60s and 70s was already used to the consumption of amusement quarter by quarter, in a time when the relationship between humans and machines was consolidated, prior started with kinetoscopes and mutoscopes. Especially the pinball may be considered the first among video games ancestors, and, being popular among young adults and teenagers, it could be the mean around which a sort of (sub)culture of pinball players arose, generating rules, behaviors and attitudes commonly shared by whoever was interested in confront a machine of the kind, while same values and meaning were not understood and shared by those who were not

pinball players. While the consumption of this kind of artifacts was socially accepted, shifts on an economic and cultural level were bringing new technologies and computers within offices and work places, with a process that has its roots in the post war period and culminated in the post-fordism and in the space race, that putted in the spotlight the importance of science, technologies, and the necessity to get used to them in front of the entire world.

With video games a new process began and saw the shift from computers considered as tools to computers as culture starting, and the new computerized artifacts offered within the amusement industry represented an early access to new technologies for young adults and teenagers, while they did not have the same attractive power for parents and moral guardians, with the formation of a generational gap that generated different narratives around the new industry. On one side of the coin, the new arcades filled with cabinet video games, pinballs, and other coin operated amusement machines became a place with their own symbology and culture, with the low, flashy and neon lights, and bright, fluorescent colors, paired with clanking, metal and 8bit sounds, and blinking and luminous screens, surrounded by crowds of young teenagers patiently waiting to play a game with their pocket full of quarters to spend. And if the arcade was the space of representation of the nascent game culture, Walter Day and the global network he created with Ottumwa's Twin Galaxies spread the same culture, sustained by the values and meanings that he wanted to display in defense of gamers with the *Life*'s photo of 1982, depicting gamers as new top players of a new discipline, and stressing out how the same gamers where in their way far from the consumption of drugs, cigarettes and alcohol, while masters of and used to new technologies and the skills they required. The other side of the coin was marked by the moral panic of parents around the violence of

video games and how that could influence the behavior of their sons and daughters, and around the arcade as a dangerous space out of their protective control, that led to a gradual rise of the consumption of games through home consoles. If the same fear was shared by governors, heavy limitations to the new industry could not be applied because of the First Amendment Rights, that made protected the contents of the new medium of video games.

The shift to home consoles, beyond the willing of the parents that wanted to keep an eye on their sons and daughters, was a consequence of several factors. The development in the industries linked to gaming, and subsequently of video games one, allowed hardware and software houses to produce artifacts that were more and more complex, long and to be consumed in private spaces, spending several hours to come to the end of the game. A development of this kind was not only the result of the better technical quality of hardware and softwares, but also it depended on the new relationships between video games and cinema, and video games and tabletop games, whit new game mechanics translated from the latter, and new technologies, storytellings and narratives borrowed from the first, both attracting fans of both to a new dimension of experience and interactivity, as happened with the first games of *Star Wars* and *D&D*. On a social and cultural level, home gaming was a result also of changes of society and public spaces: the loss of green areas and places to play with friends deprived children of the ways to experience and play out emotions and behaviors as first trainings for the adulthood, while parental anxieties related to all the danger a boy or a girl could encounter in the world outside their rooms, far from a guardian eye, reduced the propensity of parents to let their children play outside or do something that could be forbidden to them.

All this made the video games one of the few ways to experience emotions and situations that could not be lived in the ordinary life, they became a kind of magic circle where it was possible for a boy or a girl to explore safely different environments, different way of behave and different meaning and values, constructing their personal identity and personality through these new kind of experiences. Video games became also a mean of social aggregation, since they could be a common passion to share with friends at school with exchange of advices, ideas, and comments, and they could be a mean of competition, to stress out own abilities against other players/gamers while socializing with them, experiencing emotions and situations in a communitarian way, far from being a process of isolation and loneliness.

Another key factor described, at last, was the participation within the industry of the users, that generated several phenomena of co-creation of new contents that made gamers feeling more involved with their games (with the production of artifacts as *machinima*, *original video* and *mods*) and helped the industry itself to modeling new products based on the audience preferences, or to acquire new games realized as mods by users that have been already tested in the market and were appreciated by gamers. With the access to new technologies, the rise of social networks and a proliferation of games of any kinds for smartphones and tablets (part of a more general process of gamification that are interesting several layers of the society, as for example schools and universities) the participation and the communities born around video games created several networks of gamers, of firms involved in the market, or also of consumers and producers together.

In the end, the development in Italy of the amusement industry first, and the video game industry after, has been analyzed and studied, to propose an understanding of how the *Bel Paese* reacted to the spread of

pinball machines in the post world period and the rise of coin-op video games in the 70s, imported in Italy from the US. Evidences showed how small industries existed both for pinballs and coin-op video games, and in modern times a video game industry is rising, although it is small and in need of support, far from the levels and the strength of other global and European countries, such as Japan, England, and France. Nevertheless, the Italian video ludic sector is growing and producing high quality games both for the national and the international audience, with positive expectations for the growth and development in the future.

Far from being a complete analysis of the video games sector and industry in its entirety and complexity, the present thesis project attempted to highlight the most relevant moments of the development and the global spread of video games on a cultural, social and economic level, assembling together studies and researches from different dominion of knowledge in order to create a general landscape that could take into consideration not only the complexity of the industry, but also the intricate web that made it such successful in terms of consumption and audience acceptance, in light of the current *status quo* that sees gaming as a a major economic force and cultural and creative vector in the industry, capable of develop new technologies valuable for different sectors from the original one. Further research may be interested in how video games are related to well being, sustainability, social cohesion, and inclusivity, and how they may contributed to a growth, either economic and social, as also stated in the draft of the Horizon Europe Work Programme 2023-2024 (HORIZON) within the call Research and innovation on cultural heritage and CCIs in the section “A world leading European video game innovation system” (HORIZON-CL2-2023-HERITAGE-01-07) that recognizes in video games the possibility to foster economic development in several sectors and a key channel for the

expression of culture and creativity, that can be competitive based on the diversity and vastly of European cultural heritage and arts.

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