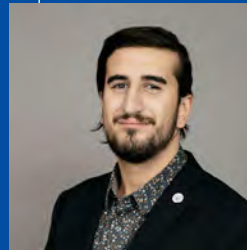


Digital Games as a Cultural Phenomenon: A Brief History and Current State

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ABSTRACT:

Digital games are one of the biggest cultural phenomenon of our time. From the first primitive devices, through milestones of age, which inherited cultural status, to the newest technology – every part has its own meaning and proves that humans are playful creatures. But in digital games lies much greater potential, which can be used outside of the gaming industry, because games have an irredeemable place in the majority of the population. In current times we can even talk about gaming society and the author of this overview study sees his goal to process the historical development of digital games, analyse its current state and therefore this study could serve as the theoretical framework for further exploration, such as the future development of this area.

KEY WORDS:

arcade games, digital games, game industry, history, portable consoles.

Introduction

Digital games are part of our everyday life. It is the world's newest and fastest-growing mass medium. They have come a long way from the first attempts to create electronic gaming devices to the latest technologies, such as virtual reality. As with television or radio, development has been conditioned by both technological and social developments. The market in which digital games operate is global, stabilized, but also prone to changes and falls, the evidence of which are events from the past that have completely changed the face of the gaming industry. It is therefore necessary to know the historical development of digital games in order to find their place in society and to make the most of their potential. Game society is a reality of today, and with new trends as well as new generations, this connection between man and technology will be increasing. Only by understanding the true social significance of digital games can we analyze the current state as well as anticipate future developments. Whether it is the establishment of digital games as regular sports, the application of digital games into active youth education, or looking for potential and developing the physical, physiological and mental fitness of players using new technologies.

The main objective of this overview study will be to analyze historical developments, find the key moments and milestones that have affected the development of digital games and their industry up to their present shape. Later, thanks to the facts acquired, there will be space for identifying the key technologies of the present, looking analytically at contemporary time, avoiding mistakes of the past that brought the gaming industry to the brink of collapse. Last but not least, we will determine exactly the place of digital games in society, who plays, what is currently played and why. These facts could be used as the theoretical framework for further research focused on development digital games and the games industry. This young medium has an incredible potential as, unlike print or radio, it can communicate with the recipient on many levels, develop exponentially, and use direct interaction.

The Origin of Digital Games and First Milestones

Early history and the first attempts at development date back to the 1940s. Technological progress was a significant part of development. Although we cannot yet talk about games as we know them today, as it took more than a decade until they found their way to the general public. Similarly, like any new technology, games development was accompanied by an interest of a narrow group of inventors. The first technologies included, for example, electric discharge tubes that appeared on a monitor. However, from the point of view of the development of the gaming industry, this invention cannot be considered as technological, since it was never presented to the public and was rather a technological breakthrough. The first technologies were mostly presented at scientific exhibitions, and gradually, games paved their way to people. "Almost two decades before the first video game found its way into an arcade, the Canadian National Exhibition hosted a strange electronic device with a brightly lit scoreboard. It read: 'computer brain' versus 'human brain'".¹ We were in 1950 and this device was called Bertie the Brain. He called visitors to a classic noughts-and-crosses competition. Despite the pilot attempts, however, digital games in their first decade of development did not reach significant success. However, scientists who saw the potential seized these foundations, and during the 1960s, the first major steps were taken that led to the expansion of games to a world-wide popular medium as we know it today. The environment in which games originated was either academic or governmental. Developments were divided into three categories – simulators and training devices (e.g. for military or sports purposes), artificial intelligence research, and for entertainment of the public.

The academic environment has provided room for a good foundation for the creation of games that primarily do not only serve as a simulator or a training device. The first major game that was partly made by students themselves is *Spacewar!*.² The author of *Spacewar!* claims that although his game was not the first there are still reasons why his game was a breakthrough: "Two interactive programs existed before *Spacewar!*, in which you interacted with switches on the computer and you changed a display on the screen, depending on what you did with the switches. But they weren't particularly designed as games. And they weren't very popular because, as games, they weren't very good".³ Only in the case of *Spacewar!* can we talk about the first relatively widespread game. Relatively because this technology was still too new and so instead of the general public, we would rather think of a narrow group of enthusiasts, academics and scientists. However, *Spacewar!* already had interesting aspects thanks to which it was not only a simple simulator. In the game, two players played off against one another and fought with a spaceship. In addition to fighting with one another, the players had to fight against time, as the fuel of the ship was exhaustible, and in addition, the basics of gravity or a magnetic field were already used in this game. *Spacewar!* brought the basics of theory into practice, and its creators have significantly participated in forming the cornerstones in the creation of digital games as such. With this pioneering project, the door opened up and in the new decade, new technology was on the rise.

- 1 BATEMAN, CH.: *Meet Bertie the Brain, the world's first arcade game, built in Toronto*. Released on 13th August 2014. [online]. [2018-02-05]. Available at: <<http://spacing.ca/toronto/2014/08/13/meet-bertie-brain-worlds-first-arcade-game-built-toronto/>>.
- 2 RUSSEL, S.: *Spacewar!*. [digital game]. Cambridge, MA : Steve Russel, 1962.
- 3 KENT, S.: *The Ultimate History of Video Games*. New York : Three River Press, 2001, p. 15.

However, except *Spacewar!*, one more important milestone must be mentioned. As the opportunities for using computers were gradually expanding, J. Kemeny and T. Kurtz created one of the first universal coding languages – *BASIC* (Beginner's All-purpose Symbolic Instruction Code) in 1964 at Dartmouth College. Kurtz previously worked on the development of the nuclear bomb and as an assistant of Albert Einstein.⁴ It is clear, therefore, that since the introductory idea there were high hopes for *BASIC*. This language created a completely new platform, as it helped to bring ordinary people, students, enthusiasts and not just a specific group of computer engineers to coding and programming. Thanks to *BASIC*, the first simple sports, logic and other games began to spread among students and enthusiasts. These creations were still closed to the general public, and would rather become widely used on university computers, because at that time, hardware was incredibly expensive. However, it is an undoubted fact that these two inventions extremely shifted the utopian ideas of the commercial use of games closer to reality.

Commercialisation of Games, the Golden Era of Arcade Games

The 1970s marked the rapid emergence of new technologies. The development of microchips and transistors led to a significant drop in prices as well as a physical reduction in overall hardware. Of course, even very expensive household technologies became more affordable for smaller companies that were not afraid to invest in the new medium. The first attempts to transfer games to consumers' homes were still technologically far in the future, but the slot machine industry saw a great opportunity. It should be noted that already during this period, the first console that could be plugged into a regular TV receiver saw the light of day. "The father of video games, then, is Ralph Baer, who was the first to create games that used television sets as their display devices, and the creator of the first home game system, the Magnavox Odyssey, which appeared in 1972".⁵ Graphics could show only 3 points and 1 line; however, even this did not prevent the creators from creating a racing or sports game. Magnavox proved that it was possible to bring the technology home, and so helped to shape the future direction of the gaming industry, but it still was not timely and appropriate. The console did not have significant commercial success, but there is no doubt that it was a leader. Also, Magnavox Odyssey was an inspiration for the pair, which soon kick-started the entire gaming industry.

Nolan Bushnell and Ted Dabney, who together founded the Atari company, embarked on their own project after having been fascinated by the Magnavox. They hired Allan Alcorn, who had previous experience, as he also studied computer engineering and asked him to create a new game. However, for Alcorn it was a great step as he had never created any game before, and so Bushnell asked him to create something simple, in principle a testing version, and Alcorn came up with table tennis.⁶ Alcorn created a coin-operated

- 4 MARCONI, A.: *History of Basic*. [online]. [2018-02-11]. Available at: <<http://www.q7basic.org/History%20of%20BASIC.pdf>>.
- 5 WOLF, M. J. P.: What is a video game? In WOLF, M. J. P. (ed.): *Video Game Explosion*. Westport : Greenwood Press, 2008, p. 5.
- 6 LOOWOOD, H.: Video Games in Computer Science: The Complex History of Pong. In *IEEE Annals of the History of Computing*, 2009, Vol. 31, No. 3, p. 13.

slot machine with a new game – *Pong*.⁷ The heads of Atari were extremely satisfied with the result and decided to place *Pong* directly on the market. *Pong* spread very quickly and increased the popularity of the new phenomenon of spending leisure time. In 1973, approximately 70,000 devices were sold, although exact numbers of true *Pong* are unclear, as the device was taken over by many other companies which produced its mutation. But the Atari numbers are clear. In 1972, the original founders Bushnell and Dabney invested 500 USD (250 each) into the company at its establishment. Later, Atari grew into a company with an annual turnover of 2 billion USD, thus becoming the fastest-growing company in the USA at that time.⁸ In the 1970s, games had a breakthrough and became a huge phenomenon. The great success of *Pong* helped to create the gaming industry on multiple levels. Jules Millman came up with an idea to get arcade games into shopping centres.⁹ He created a model of the first arcade gambling dens where employees watched the running and behaviour of the players, parents could do their shopping with total confidence while their children were having fun. Other entrepreneurs adapted Millman's idea, and so arcade games and gambling dens provided for this purpose virtually became part of business centers in the 1970s in the USA. Startup companies were not idle and invested their profits in the development of new games. They primarily concentrated on racing and other interactive games – e.g. *Tank* by Atari,¹⁰ or *Gun Fight*¹¹ by Midway. The latter company played an important role also for another reason. In the USA, it supplied the market with re-made games licensed by Taito. This is how Japanese games started to be distributed in the USA. *Gun Fight* was the first arcade game to run through a microprocessor, which again opened up completely new possibilities. The co-operation of Taito and Midway fell apart in 1979, since Taito earned so much money that it could open its own branches and distribution networks in the USA.¹² Games became a new phenomenon mainly for new generations. It was certainly the situation in the USA that led to this – the more relaxed 1970s, the insurgency against the Vietnam War, the hippy movement and others. The games began to be implemented into society so much that they gave rise to the initial gaming theories. For example the game *Death Race*,¹³ which was the first game to raise questions on violence in digital games and its impact on players themselves.

At the end of the 1970s, much more developed games appeared in the market and obtained literally cult status. Games such as *Asteroids*¹⁴ – the most successful game by Atari, *Pac-Man*¹⁵ and, of course, the game *Space Invaders*¹⁶ – considered as the first really massively successful game. This period, often referred to as the golden era of arcade games, finally commercialized games and attracted the general public. With the arrival of *Space Invaders*, games became so popular that in the USA, in addition to shopping centers, they could be found virtually everywhere – in shops with spirit drinks, petrol stations, airports, and, in a rather bizarre way, also in undertakers.¹⁷ In the golden age, experiments with pseudo-3D imagery and the vector graphic rather the raster graphic began to be explored, resulting in a further technological advance. However, due to the expensive development and especially the costly repair of devices, games with simpler raster

7 ATARI: *Pong*. [digital game]. Sunnyvale, CA : Atari, Inc., 1972.
 8 KENT, S.: *The Ultimate History of Video Games*. New York : Three River Press, 2001, p. 38.
 9 SMITH, K.: *Arcade Origins*. Released on 22nd March 2018. [online]. [2018-02-10]. Available at: <<http://allincolorforaquarter.blogspot.sk/2013/03/arcade-origins.html>>.
 10 ATARI: *Tank*. [digital game]. Sunnyvale, CA : Atari, Inc., 1974.
 11 TAITO: *Gun Fight*. [digital game]. Tokyo : Taito, 1975.
 12 KENT, S.: *The Ultimate History of Video Games*. New York : Three River Press, 2001, p. 64.
 13 EXIDY: *Death Race*. [digital game]. Sunnyvale, CA : Exidy, 1976.
 14 ATARI: *Asteroids*. [digital game]. Sunnyvale, CA : Atari, Inc., 1979.
 15 NAMCO: *Pac-Man*. [digital game]. Tokyo : Namco, 1980.
 16 TAITO: *Space Invaders*. [digital game]. Tokyo : Taito, 1978.
 17 KENT, S.: Super Mario Nation. In WOLF, M. J. P. (ed.): *The Medium of the Video Game*. Austin, TX : The University of Texas Press, 2002, p. 44.

graphics were still dominant at the end of the 1970s. Digital games were implemented in society and became an integral part of pop culture. Leisure groups, interest groups, or even cults around the games emerged. The popularity of games moved beyond the other fields of art – films about games and players began to emerge – e.g. *Tron* (1982). The period, also known as the golden era of arcade games, was coming to an end. With such growing popularity, when games became virtually part of everyday life, it would not take long for games to get closer to consumers.

First Portable Consoles and the Fall of the Market in 1983

The huge expansion confirmed the well-known business proverb - what goes up, must come down. The year 1983 was a disaster for the digital-gaming industry. Due to several factors, a huge fall, especially on the North American market, occurred. Over two years, nearly 97 % of companies' revenues fell due to saturation of the market, lack of graphics, and higher audience demands. This resulted in the disappearance or dissolution of many companies developing home consoles or computers. One of the factors was the emergence of third-party companies that did not create hardware, but flooded the market with games whose quality was clearly lagging behind.¹⁸ Creators of digital games used massive marketing and created games inspired by blockbusters like *Indiana Jones – Raiders of the Lost Ark* (1981) or *E.T. the Extra-Terrestrial* (1982). However, the games had poor graphics, gameability, and had the opposite effect on the audience. While in the US, the gaming industry was on the brink of collapse, a new platform was set up in Japan to save it all. Popular at home and after the collapse of their partnership with Atari (as a result of the fall of 1983), the Japanese decided to go to the American and European markets themselves.¹⁹ Nintendo launched its *Nintendo Entertainment System* (NES) that revived game console sales with its first-class graphics, fun content and modern design. It became an instant hit. We talk about the third generation of gaming systems, where NES clearly dominated. To compare, Atari brought a new 8-bit gaming system in the form of the Atari 7800 console – their sales are estimated at approx. 1 million pieces. Nintendo sold nearly 62 million pieces at that time. Over the next few years, NES spread to the whole world – the USA, Europe, Australia. Consoles enjoyed their renaissance, but Nintendo wanted to avoid a similar fall as Atari, and so they came up with a new business model. Instead of exclusive creation on their platform, they began to sign licenses with many third-party companies.

This resulted in a sufficient amount of quality content, and NES became a cult affair. The titles that NES brought to homes were so successful that they began their own extensive marketing - from clothing, movies, household accessories, toys, etc. Let us mention only the most well-known – *Super Mario Bros.*,²⁰ *Legends of Zelda*²¹, or *Final Fantasy*.²² The arrival of the NES clearly changed the gaming industry, helped it kick-start and brought a

18 ERNKVIST, M.: Down Many Times, but Still Playing the Game. In GRATZER, K., STIEFEL, D. (eds.): *History of Insolvency and Bankruptcy from an International Perspective*. Huddinge : Södertörns högskola, 2008, p. 185.
 19 Ibidem, p. 186.
 20 NINTENDO: *Super Mario Bros*. [digital game]. Kyoto : Nintendo, 1985.
 21 NINTENDO: *Legends of Zelda*. [digital game]. Kyoto : Nintendo, 1986.
 22 SQUARE: *Final Fantasy*. [digital game]. Tokyo : Square, 1987.

gaming revolution concerning consoles. However, reduced production costs and technological progress brought new capabilities to home computers. In 1982, the *Commodore 64* was released to the public and it was an immediate success. Programmed in BASIC, it offered advanced graphics for its time, using the same ports as the Atari 2600, thus allowing players to use old controllers. In Europe, the *Sinclair ZX Spectrum* became popular at that time, and the emergence of *IBM PC / AT* and *Apple Macintosh* was the undisputed milestone. Graphics development came in 1985, and the computers brought the first 16-bit graphics interface with greater resolution and high-quality sound. By popularizing computers and creating the first networks, the first attempts to play online can be dated back to this era.

Computer Boom and New Generations of Game Consoles

The 1990s can be labeled as a very innovative decade. The world of digital games became globally popular, games gradually began to move into 3D graphics, new game genres emerged that became extremely popular – *FPS* (first-person shooter), real-time strategy, or *MMO* (a massive multiplayer online game). Arcade games were markedly declining and an issue of history, games entered people's homes. The transition to 32- and 64-bit graphics brought new possibilities for using 3D texture mapping to open up completely new possibilities for digital gameability. Popular titles such as *Mortal Kombat*,²³ *Doom*,²⁴ or *Wolfenstein 3D*²⁵ became part of many households. The development and drop in prices of microprocessors opened the way for, in addition to the new generation of consoles, mainly computer gaming. The operating system by Microsoft – MS-DOS popularized gaming even more, as it was widely available at relatively low costs. In addition, in many countries there was no legislation and no distribution network, so the only option was piracy – which was practically not illegal, as no laws existed. In this period (the 1990s), games began to spread even among the narrow public in Slovakia. Due to the technical efficiency, especially textual adventures were being created in Slovakia – e.g. the game *Dokonalá Vražda*²⁶ by L. Vittek, the founder of the first game distribution company in Slovakia, called Ultrasoft. “The distinction of Vittek's textual adventure not only lies in his later business activity but also in the fact that it is rather a controversial and sophisticated simulator of planning a successful murder where a player does not convey a specific fictional character but can play under his or her own name”.²⁷

In addition to computer games, the fourth generation of consoles also came on to the market. By popularizing CDs, games could finally have space for a bigger story and more complex graphics. The fifth generation of consoles returned the Atari company to the market, but again, it was overcome by an avalanche of Japanese competitors – *Nintendo 64* and in particular, the Sony company. In 1994, Sony launched the future of gaming consoles – *Sony PlayStation*. The first console in history, which surpassed the magical limit of 100 million pieces sold, became part of almost every household in the USA, also

23 MIDWAY: *Mortal Kombat*. [digital game]. Chicago, IL : Midway, 1992.

24 ID SOFTWARE: *Doom*. [digital game]. New York : GT Interactive, 1993.

25 ID SOFTWARE: *Wolfenstein 3D*. [digital game]. New York : GT Interactive, 1992.

26 ULTRASOFT: *Dokonalá Vražda*. [digital game]. Bratislava : Ultrasoft, 1987.

27 *Piráti a pionieri*. [online]. [2018-02-20]. Available at: <<http://www.scd.sk/?muzeum-dizajnu-aktualne&sprava=pirati-a-pionieri>>.

enjoyed enormous popularity in our country. In the 1990s, the availability of portable consoles was also expanding – more successful as well as unsuccessful projects were in the shadow of a single giant – Gameboy by Nintendo. These consoles, however, had an even lower battery life and a lower software quality; on the other hand, a possible direction for the gaming industry could be observed there. The Millennium break brought further technological advances, and online gaming was gradually coming to the fore.

The Contemporary Gaming Industry

The arrival of the new millennium again diversified the market, which has recently been steady. The global market is currently dominated by a narrow group of companies. Unlike the past, when game developers and developers of gaming devices – they were usually the same companies, the market is now very wide and filled with various third-party developers (companies that make software components without hardware). However, the current model has recently worked in such a way that the largest producers on the market are creating huge conglomerates that have a direct or indirect impact on developers (and third-party companies), in the form of various shares and other partnerships. The current state of affairs is particularly threatened by the pirate market with illegal copying of titles, especially in the segment of computer games. Microsoft and their console *Xbox One*, Sony with the console *PlayStation 4* and Nintendo with the console *Switch* dominate the market and are at the forefront in the last-generation console sales.²⁸ When talking about the segment of computer games, the most popular service nowadays is Steam – software founded in 1993 by the Valve company which manages and sells digital rights to multiplayer games. It is the biggest distribution service in the PC segment – it controls nearly 75 % of the market.²⁹

In terms of the development and production of the content (of games), Sony InteractiveEntertainment – which buys other creative studios, empowers them and employs subsidiaries (such as Naughty Dog, Santa Monica Studio, or Bend Studio), occupies a leading position on the market. Another influential developer is the company Activision Blizzard (formed from two giga studios at the end of 2007 and the beginning of 2008). The company is behind popular titles such as *Call of Duty WWII*,³⁰ *Destiny*,³¹ or behind the most popular massive multiplayer online role-playing game (MMORPG) in the world – *World of Warcraft*.³² The most successful „smaller“ studio is still Rockstar Games, which, in contrast to its competitors, issues their original titles irregularly and over several years; but on the other hand, they care about great gaming opportunities, player freedom in narrative decision-making and technological breakthroughs, as reflected by the game *Grand Theft Auto V*³³ which became one of the best-selling games and only three days after its official release it exceeded the magic limit of 1 billion USD.³⁴

28 Global unit sales of current generation video games consoles from 2008 to 2017. [online]. [2018-02-20]. Available at: <<https://www.statista.com/statistics/276768/global-unit-sales-of-video-game-consoles/>>.

29 EDWARDS, C.: *Valve Lines Up Console Partners in Challenge to Microsoft, Sony*. Released on 4th November 2013. [online]. [2018-02-20]. Available at: <<https://www.bloomberg.com/news/articles/2013-11-04/valve-lines-up-console-partners-in-challenge-to-microsoft-sony>>.

30 SLEDGEHAMMER GAMES: *Call of Duty WWII*. [digital game]. Santa Monica, CA : Activision, 2017.

31 BUNGIE: *Destiny*. [digital game]. Santa Monica, CA : Activision, 2014.

32 BLIZZARD ENTERTAINMENT: *World of Warcraft*. [digital game]. Irvine, CA : Blizzard Entertainment, 2004.

33 ROCKSTAR NORTH: *Grand Theft Auto V*. [digital game]. New York : Rockstar Games, 2013.

34 GOLDFARB, A.: *Gta 5 Sales Hit \$1 Billion Dollars in Three Days*. Released on 20th September 2013. [online].

Even now, five years since it was released, it still occupies the forefront of sales in particular due to its sophisticated online mode.³⁵ The preferences of players to explore new so-called indiegames (from 'independent') has become the popular trend of the present. Indiegames are games by smaller developers who do not belong to huge conglomerates, do not have hundred-million dollar budgets for both development and marketing, yet they can still capture attention with creativity when creating gaming content and using non-standard models in gameability. However, the fact remains that the most popular titles come from the cult series which have been created by big studios for years (for a more detailed description, see Table 1).

Table 1: Best-selling game titles in 2017

Ranking	Name of the title	Developer	Original title (first in the series)
1.	Call of Duty: WWII	Activision	No
2.	Star Wars: Battlefront II	Electronic Arts DICE	No
3.	Super Mario Odyssey	Nintendo Entertainment	No
4.	NBA 2K18	2K Games	No
5.	Mario Kart 8	Nintendo Entertainment	No
6.	Madden NFL 18	Electronic Arts Sports	No
7.	PlayerUnknown's Battlegrounds	Microsoft Studios	Yes
8.	Assassin's Creed: Origins	Ubisoft	No
9.	The Legend of Zelda: BotW	Nintendo Entertainment	No
10.	Grand Theft Auto V	Rockstar Games	No

Source: KAIN, E.: *The Best-Selling Video Games of 2017*. Released on 19th January 2018. [online]. [2018-02-21]. Available at: <<https://www.forbes.com/sites/erikkain/2018/01/19/the-best-selling-video-games-of-2017/#ea839a862260>>.

The latest trend that does not have such a long historical base as arcade or console games is undoubtedly mobile games. The first known mobile game is the modification of the popular *Tetris*³⁶ from 1994. Three years later, the Nokia company launched the game *Snake*³⁷ – its original title as well as later modifications were installed on more than 350 million devices.³⁸ Nowadays, with advanced technologies and the emergence of smartphones, mobile games have been more and more popular. The most important distribution platforms are, of course, public Internet shops available via smartphones – for Apple, it is Appstore, for Android – Google Play. In addition to user applications, it is possible to download a game into a smartphone for free or for a fee. The reasons for popularity are

[2018-02-20]. Available at: <<http://www.ign.com/articles/2013/09/20/gta-5-sales-hit-1-billion-in-three-days>>.

35 PEREIRA, CH.: *10 Best-Selling Games Of March 2018 In The US Revealed*. Released on 26th April 2018. [online]. [2018-02-21]. Available at: <<https://www.gamespot.com/articles/10-best-selling-games-of-march-2018-in-the-us-reve/1100-6458491/>>.

36 PAJITNOV, A.: *Tetris*. [digital game]. Moscow : Dorodnitsyn Computing Centre, 1984.

37 NOKIA: *Snake*. [digital game]. Espoo : Nokia, 1997.

38 GOGGIN, G.: *Global Mobile Media*. Milton Park : Routledge, 2010, p. 101.

obvious – the easy access and the use of hardware without external keyboards or monitors virtually anywhere. Historically, games created for portable game consoles (Gameboy, and others) can be considered as predecessors of mobile games, but the portable consoles themselves suffered from a number of drawbacks – poor performance, battery life, etc. Mobile games as part of smartphones have become an inseparable part of spending leisure time of the wider public.³⁹ Unlike sophisticated game stories, the most popular games build upon interaction with the player, often the story itself is absent. Another significant difference is that even though bigger developers are involved in this segment, a number of mobile games come from small teams, startups, or people for whom development is a hobby. In order to understand the dynamics of this market, it is worth mentioning the fact that many games are offered for free in virtual stores, but they contain a lot of advertising, which provides the main revenue from each game. Another form of making profits is so-called *freemium*. It is a business model in which the player has the option of installing the game for free, but the game mode may be limited or time-limited. Due to poor control, this model is very dangerous especially for juvenile users as it directly lures them into financial transactions, which can evoke the type of gambling that is a criminal offence for minors. The model of distribution, sales and use of mobile games is different from that of digital games, but we still talk about a huge market. Additionally, if a game becomes popular enough, it can be recycled into other segments (pc gaming, consoles, movies, clothing, etc.). A good example of this is the game *Angry Birds*⁴⁰ which originated from the Finnish startup Rovio. A small independent company created the game, so to speak, on a shoestring in 2003.⁴¹ After gaining worldwide popularity, its price grew to astronomical heights. The real value of the product is hard to estimate, but the indicative fact may be that in 2017, the Rovio chairmen refused to sell the brand name *Angry Birds* to Zynga company for 2.25 billion USD.⁴² Since the original title was released, the game has had dozens of new versions, a movie and an extremely large number of other products.

To illustrate the popularity of mobile games and how high their profits are, table 2 is provided, where the profits of the top 10 mobile games which are available for free but contain in-app transactions, are indicated. This table shows the transactions made in the game within 24 hours. The games in the table are for the Apple – iPhone smartphones platform and only for the US market. It follows that global earnings on both major platforms (iOS + Android) may be ten to hundred times higher.

Among mobile games, another contemporary trend is the rising popularity of electronic sports. Digital games became a spectator sport. eSports are a form of using digital games for competitive purposes. Early games were created as a form of competition and the later genre differentiation shifted these options even further. Sports, racing, strategic and other games were created which challenged players to pit their abilities not only against artificial intelligence but also against one another. At the turn of the millennium and with the emergence of the Internet, various amateur competitions took place; however, competitive rivalries have become a trend only relatively recently. At this point in time, games like the first-person action simulation *Counter-Strike*⁴³, or strategies *Defense*

39 DUNN, J.: *Smartphone addiction' seems to only be getting stronger*. Released on 25th May 2017. [online]. [2018-02-25]. Available at: <<http://www.businessinsider.com/people-spending-more-time-on-smartphones-chart-2017-5>>.

40 ROVIO: *Angry Birds*. [digital game]. Helsinki : Rovio Entertainment, 2015.

41 BASHIR, D.: *The History of Angry Birds*. Released on 6th October 2017. [online]. [2018-02-25]. Available at: <<https://gamehubs.com/article.php?id=the-history-of-angry-birds>>.

42 NARCISSE, E.: *Zynga's Two-Billion-Dollar Bid Wasn't Enough to Buy Angry Birds*. Released on 17th April 2012. [online]. [2018-02-25]. Available at: <<https://kotaku.com/5902714/zyngas-two-billion-dollar-bid-wasnt-enough-to-buy-angry-birds>>.

43 VALVE: *Counter-Strike*. [digital game]. Bellevue, WA : Sierra Studios, 2000.

of the Ancients⁴⁴ (DotA) and StarCraft⁴⁵ have been massively played at tournaments all over the world. The largest market and audience share is in Asia, but eSports are also very popular in the USA, or in Slovakia and generally in Europe.⁴⁶ The final of one of the world's largest tournaments took place in 2017 in neighbouring Poland: Intel Extreme Masters in Katowice and the tournament was visited by 173,000 spectators.⁴⁷ Electronic sports have been gaining popularity especially among the younger generation that watches players via streaming services such as Twitch or Youtube channels. It is therefore more likely that this new phenomenon will continue to grow. The eSport market has exceeded a 5 billion USD earnings limit in 2017. For comparison, NHL (National Hockey League – the most popular ice hockey association) earned 3.7 billion USD.⁴⁸

Table 2: Profits of top 10 mobile games within 24 hours (only iOS)

Ranking	Game	Developer	Profit for 24 hours (USD)
1.	Pokémon GO	Niantic, Inc.	1,642,725
2.	Candy Crush Saga	King	1,269,269
3.	Clash Royale	Supercell	973,403
4.	Final Fantasy XV: A New Empire	Epic Actionllc	665,748
5.	ROBLOX	Roblox Corporation	645,776
6.	Candy Crush Soda Saga	King	571,096
7.	Homescapes	Playrix Games	300,932
8.	Slotomania: Vegas Slot Casino	Playtika Ltd	290,335
9.	Toy Blast	Peak Games	277,454
10.	Toon Blast	Peak Games	242,639

Source: Top Gorssing iPhone – Games United States. [online]. [2018-02-26]. Available at: <<https://thinkgaming.com/app-sales-data/>>.

Another big trend is the implementation of augmented and virtual reality into the user interface. In recent years, developments have shifted forward, but the enormous potential is yet to come with advances in science. One of the most important arguments of people who are not supporters of digital games can thus completely disappear. Lack of physical activity has a proven impact on the health of the population and, of course, players who spend most of their free time playing. However, with the emergence of virtual reality, players can penetrate the fictional world of digital games and use more than just motor skills. There are many research studies that already confirm for developers of games with

- 44 BLIZZARD ENTERTAINMENT: *Defense of the Ancients*. [digital game]. Irvine, CA : Blizzard Entertainment, 2003.
- 45 BLIZZARD ENTERTAINMENT: *StarCraft*. [digital game]. Irvine, CA : Blizzard Entertainment, 1998.
- 46 VANDITMARSCH, J.: *Video Games as a Spectator Sports*. Released on 18th November 2013. [online]. [2018-02-11]. Available at: <<https://dSPACE.library.uu.nl/bitstream/handle/1874/288162/Video%20Games%20as%20a%20Spectator%20Sport%20-%20JL%20van%20Ditmarsch.pdf?sequence=2&isAllowed=y>>.
- 47 KSIĄŻEK, P.: *IEM w Katowicach odwiedziło 173 000 fanów*. Released on 16th March 2017. [online]. [2018-02-10]. Available at: <<http://cybersport.pl/86363/iem-katowicach-odwiedzilo-173-000-fanow-infografika/>>.
- 48 PARADISE, A.: *The history behind a \$5 billion eSports industry*. 2016. [online]. [2018-02-10]. Available at: <<https://techcrunch.com/gallery/the-history-behind-a-5-billion-esports-industry/>>.

augmented reality the improvement of motion habits of younger generations. For example, the mobile game *Pokémon GO*⁴⁹ in which a player uses augmented reality must use his or her smartphone to physically move to locations to catch Pokemons to score points and progress in the game. A study conducted at Stanford University states that, thanks to *Pokémon GO*'s play, the number of steps of the examined sample increased on average by 1 473 steps a day.⁵⁰ There are, of course, still many questions that need to be answered. Needless to say, contemporary trends such as eSports and VR are so broad and important in game studies, that we believe they deserve research studies on their own.

Conclusion

Digital games are one of the fastest growing media. Over a couple of decades, the first primitive attempts to create entertainment have been transformed into a fully-fledged, powerful medium, and a sector that has a several billion dollar turnover each year. Literally from day to day, innovations appear, shifting forward the boundaries of this segment more and more. What could not be done yesterday can be done tomorrow. Few cultural phenomena have so quickly established themselves in society. The development, exploitation and popularity of games are given by social standards but, of course, conditioned by technological progress. It is therefore necessary to know in detail how the market evolved and behaved in the past, to carefully analyze the moments when digital games almost ended up in the dustbin of history, to search for causes and consequences. Only in this way can we properly analyze the societal place of digital games today. Thanks to the detailed knowledge of the past, we can apply digital games and game studios into today's company; look for positives and negatives and exploit the maximum potential that is hidden in this new media. Even social sciences have a place in analyzing digital games and their consumers, as digital games create completely new worlds, but often using mechanisms of our reality. Therefore, the social consequences of the players' actions in the virtual world should not be forgotten, whether it is mutual communication, attitude to violence, racism, xenophobia, or other negative phenomena of our society. Games are and can be a very powerful communication tool that has penetrated our culture in a global manner, and it is only up to society to ensure that they are used correctly, rationally and responsibly.

As with the whole online environment, digital games also create new social discourses that need to be thoroughly analyzed. In addition to examining the current state of the art, the development of digital games in the future should be explored and predicted since, as has already been pointed out, games are linked to technological progress that is growing by leaps in the information segment every day.

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