Supplementary Report to "A Timeline of the Usage and Worldwide Impact of Video Games"

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This paper serves as a supplementary documentation for the R script visualization titled "A Timeline of the Usage and Worldwide Impact of Video Games", which can be found at raw.githubusercontent.com/pomegranar/media-use-report/refs/heads/main/timeline.r as a downloadable R script, though note that the library "timevis" is a dependency. Please refer to the repository at github.com/pomegranar/media-use-report for any other information regarding the project, including this paper. Although the core information found in this report can be found from the timeline, this report serves to elaborate why these events were specifically included, including an explanation for their importance, and further examination bridging certain topics to influential theories and developments, aggregating a comprehensive analysis on the evolution of video games as a new media throughout its history.

New media is characterized by the convergence of media technology and computing (Manovich, 2002). If we think of games in the general sense, one could say it is a media present in all cultures. Thus, due to the ubiquitous presence of games in society with the advent of computers as we know it, games understandably became one of the first media to undergo media computerization with titles such as OXO, Tennis for Two, and Pong. Yet, the concept of video games in the popular definition only became popular late into the 1970s to early 1980s (Shaw, 2010) with games like Pong and Pac-Man becoming commercial arcade hits.

Another characterization of new media is how its usage is shaped by existing forms of media before it finds its habitual/ritualized conventional usage in society (Gitelman & Pingree, 2010). Home video game consoles, as a consumer device made its way into the living room through the established presence of the television screen. Consumers wouldn't buy a new computer to play computer games, they would buy a 'console' dedicated to turning the television into a new form of interactive entertainment.

Before continuing this discussion, I would like to draw a distinction between computer games and video games. For the purposes of this discussion, the term 'computer game' will refer to any computer-mediated game, which can include text-based games, while 'video game' will require an animated display

based on player actions. Video games for personal computer platforms will be referred to as ‘PC video games’, or ‘PC games’. This last distinction highlights the various different platforms that video games now exist on. These include the arcade cabinet, home game consoles, PC games, handheld game consoles, and mobile phone games.

Video games as a media in its infancy mainly aimed to provide a digital simulation of real-world games, such as with tennis for two being an analog for tennis, and OXO being an analog for tic-tac-toe. This phase of a new media introducing itself by deriving from the foundations of existing societal habits of media use is what every emerging form of media goes through to assert itself into public adoption (Gitelman & Pingree, 2010). If we follow the arcade game Pong—one of the earliest arcade games in existence—we will find that following its arcade release in 1972, a home version was quickly developed and released to see commercial success like its predecessor. Pong, and the Magnavox Odyssey (the first publicly available home video game console) have been said to have established the video game industry as a whole. As of 2022, the video game industry as a whole generated over $180 billion USD, according to Forbes (Arora, n.d.) and Visual Capitalist (Rao, 2023).

During the early stages of video game history when arcade and consoles were the only ways people mainly played video games, the video game crash of 1983 hits. This was a time when the market demand for video games was high, yet the quality of games were at an all-time low, with games boring their audiences by frequently recycling gameplay elements from other games. The movie tie-in game “E.T.” was released for the Atari 2600 (a dominant home video game console at the time) in 1983, and became the headline title for this market crash (*E.T. & The Fall of Atari*, 2023). Not only was it a massive failure, but it led to the fall of one of gaming’s earliest behemoths—Atari, but birthed one of gaming’s largest publishers—Activision, which now makes the Call of Duty franchise. This period also marked a shift in the way which games were developed and distributed, with many third-party game developers publishing games for the Atari console, a four-fold increase in the number of titles in the span of six months meant the market became grossly oversaturated. This, along with the new competitive pricing of

home computers meant that console manufacturers had to rethink video game sales as a whole (*The Milwaukee Journal - Google News Archive Search*, 2016).

In came Nintendo, with their own home console, the Nintendo Entertainment System (known simply as the NES), which due to the shock from the 1983 video game crash, implemented measures such as BIOS-checking, and region-locks to combat unlicensed third-party manufacturers form making NES-compatible games. This meant that Nintendo could control and dictate the quality of games available for the NES, whereas its competitor, the Sega Genesis was more open for third party developers. This wasn't for long though, as all modern home consoles now implement strict copy protection and a platformized approach to third party development.

After the success of the Super Nintendo Entertainment System in 1990 and the Sony PlayStation in 1994, copy-protection and platformization became the proven standard, as it provided a way for third party developers to produce high-quality games using first-party software development kits (SDKs), and turn the console into a bridge to connect producers/publishers with gamers (Nieborg & Poell, 2018). This meant that gamers could buy many high-quality games at a premium on powerful yet affordable hardware (consoles) that sold at a loss, while the console manufacturers/platform maintainers earned with game sale made.

Another key development during Nintendo's rise was the invention of the handheld gaming market, popularized by the Nintendo Gameboy in 1989. Although not as widespread as consoles, handheld gaming proved itself in the larger video game market, rivalling PC gaming (Rao, 2023). Handheld consoles at the time were more than often sub-par replicas of their TV-connected console counterparts. Only until recently, following developments in smartphone batteries and display technology did the technology demanded for handheld gaming become feasible with the launch—and success—of the Nintendo Switch and the Valve Steam Deck. Further discussions on mobile gaming will take place later in this report.

The era of the home console-dominated gaming industry lasted for around two decades, enough time for the console game controller (such as that of the PlayStation's) to become a cultural symbol for

video games as a whole, and characters such as Pikachu and Sonic becoming a more popular name than key political figures. This was when controversies surrounding the use of video games among children started to make news headlines, particularly the idea that certain games could condone violent behavior. This discussion mainly followed the games Street Fighter II (1991) and Mortal Kombat II (1993), both of which were fighting games with high-fidelity graphical upgrades from the previous generation that saw massive financial success. This led to the creation of the ESRB and later other content rating systems designed to communicate the content of video games (Chalk, 2007).

This was also a time when major computer technology companies began to invest in gaming. Microsoft, already holding the crown in desktop operating systems and computing software, made the jump to video gaming with the Xbox in November 2001 after fears of letting Sony dominate the market for a household entertainment device. Although not as commercially successful as its mature competitor—the PlayStation 2, it brought online gaming into the mainstream with Xbox Live, allowing gamers on Halo (the Xbox's flagship title) to play with each other and talk in voice calls.

Such stories of the gaming industry pushing bleeding-edge technology into public recognition are not uncommon. Another prime example was the jump to Blu-Ray when the PlayStation 3 launched in November 2006 with a built-in Blu-Ray disk player. Not only did this mean that games would have extreme visual and auditory fidelity, it meant that millions of people suddenly also had a Blu-Ray disc player, creating a new market for DVD and Blu-Ray rental services (Blockbuster & Netflix), turning the video game console into an all-in-one entertainment hub.

With the increase of internet speeds in the 2000s, video game company Valve introduces Steam in 2003 (Rao, 2023), a digital PC game store where gamers could buy and download games directly from the internet, eliminating the need to buy physical discs to play a game. The convenience and platformization that Steam's games Digital Rights Management (DRM) offers made it a compelling platform for publishers to sell their games and for gamers to buy games and additional content (and manage game libraries). This model of convenience to combat piracy has been serving Valve well for

over two decades, making it one of the largest monopolies in gaming, and pushing PC gaming to grow larger than the console market.

The democratization that the rise in PC gaming offered gave rise to internet cafés—places where gamers could play PC games without having to invest in an expensive personal gaming computer. These places opened up all across the globe, creating communities of gamers (both online and local) that would compete in games like World of Warcraft, League of Legends and Counter-Strike. Tournaments would become known in the public lexicon as 'e-sports', the same way chess is considered a mental sport. The rapidly growing community of e-sports enthusiasts prompted the creation of various other social platforms such as Twitch in 2007 (a live streaming service for gaming content creators), and Discord in 2015 (a community text messaging platform), and although not related to its creation, gaming's impact on YouTube must not be understated.

Gaming culture, especially e-sports culture, has also had an impact on the public lexicon, introducing new words and phrases such as NPC being popularized by gaming content creators through TikTok. Aspects of video game culture such as slang and abbreviations making their way to casual, or even professional use has also been widely documented. In a work setting, 'gamification' refers to the transferring of video game mechanisms to other areas in life, often related to an attempt at improving productivity by turning something into a fun, reward-based activity. Although not a new concept, the fact that people use the word 'gamify' to refer to this act just proves the ubiquity of gaming in everyday life and society (at least in the English-speaking world).

The most recent and most disruptive shift in the video game landscape would be the worldwide adoption of smartphones following the launch of the iPhone in 2007, which introduced the video game industry to a whole new platform that had an extremely large audience, on hardware that was not designed first for games. Being on a device with low power, smartphone games were often very basic, but strived to include the most addicting and enticing gameplay one could come up with. Games such as Candy Crush Saga from King and Angry Birds from Rovio proved the foundations for a "freemium" business model, which meant players would play the game for free, and buy convenience luxuries to gain

a leg up above friends who would be playing the same game as them (this connects to the global adoption of Facebook and other social media platforms) (Nieborg & Poell, 2018). Now that it has become larger than the PC games and Console games market combined (Rao, 2023), aspects of the freemium model of mobile/smartphone games are now being used in non-mobile games.

Throughout this timeline and report, it is evident that video games have had an undoubtedly large impact on mass society and culture, despite only existing for only around half a century. Its widespread appeal and unparallelled commercial opportunities were able to affect every part of modern life, from entertainment as a whole, to the way we speak, and even the way we think. Video games are also a catalyst for innovation, accelerating the development of more powerful hardware beneficial for more than gaming. Games have also created numerous job opportunities and derivative markets, facilitated economic growth and created new career paths for those eager in the computational sciences.

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