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CHAPTER

10 Games, Online and off

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Abstract

This chapter, which discusses the evolution of innovative research on game playing in the household and online, such as in studies of massive multiplayer, three-dimensional Internet game environments, demonstrates the need for Internet Studies to deal with the ebbs and flows of the market and the rapid pace of technical change. The video game industry is one of the most profitable and dynamic industries in entertainment. Its future will possibly add a mix of social connectivity and continuing advances in technology as players seek each other as much as they seek games. Casual games are frequently incorporated into pre-existing social networks. Serious games did result in a change in knowledge, opinions, and possible future actions. The research community surrounding games comes from communication, psychology, cultural and critical studies, sociology, and now even business, economics, and computer science.

Keywords: [game playing](#), [household](#), [online](#), [Internet Studies](#), [video game industry](#), [casual games](#), [social networks](#), [serious games](#)

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BY any benchmark—economic, mind-share, cultural impact, etc.—video games are now a ubiquitous and important element of modern culture. After decades in the social and commercial wilderness, games are taken as seriously as anything “fun” can be in an industrial society. Yet this very sense of frivolity is a major reason why few people understand the medium, and why research is often more focused on what evils lurk below the surface than on a fundamental understanding of what is going on above it. Accordingly, this chapter will serve as a primer to anyone looking for basic background knowledge about games, gamers, and the expanding online world they inhabit. The first half offers a historical perspective, tracing the industry's origins and the social diffusion of games, while the second half offers a closer look at several trends and important differences across the medium, and concludes with a brief note on research traditions. We focus on the so-called “casual” explosion, the continuing importance of console-based games, the boom of virtual worlds, the migration of children into online spaces, and finally, the oddly named “serious games” movement. We offer this second set of perspectives because games are often mistakenly assumed to be as

uniform as other media. But unlike books, film, magazines, or television, the formats, uses, and types of video games are dizzyingly complex and varied. Similarly, our understanding of the cognitive processes and social spaces surrounding games tends to lag behind the more nuanced and larger body of literature studying more established media. We know a great deal about television's effects, culture, and how people use it, but we often have a hard time understanding why a solo *Bejeweled* player is on an entirely different planet than a raiding team in *World of Warcraft*. But to begin, it's best to take the long view and see where video games came from.

A brief history of video games

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The video game industry—largely based in the United States—is one of the most profitable and dynamic industries in entertainment. Games featuring the humble plumber Mario have made twice as much money as all five *Star Wars* films combined ↵ (Borrow 2003). It is also an industry that nearly wasn't—one that survived technological upheaval, a rapidly changing consumer base, and a host of leaders known as much for their personal excesses and luck as for their insight and technical brilliance.

Origins: games and players, 1951–2003

The game industry is marked by rapid and dynamic change, owing to seismic shifts in both technology and in the user base. From its earliest origins as a hobby and into its modern form of a fully corporatized mainstream entertainment medium, the games business has endured wild swings and shocks. The economist Joseph Schumpeter (1943) has written of such “gales of creative destruction” in business—changes that shift paradigms and transform the market. A savvy consumer base thriving on interactive, networked technologies turns out to be a gale of creative destruction just as powerful as any new technology (Cowan 1999).

In the early 1960s, game development took place in university basements, with young and enthusiastic programmers working long hours for their own gratification. In contrast, today's industry structure is marked by vertical integration, professional management, and a fiercely competitive marketplace driven by the non-interoperability of the major game systems. For example, although DVDs made by Sony will work on DVD players made by another firm, game consoles do not feature such compatibility. Games are actually five overlapping markets: console systems, handheld games, arcades units, PC games, and mobile devices (Williams 2002). How did we get from there to here?

The initial era began with computer enthusiasts in the 1960s, moving eventually to a corporate model that collapsed in the early 1980s with the failure of Atari. This collapse can be considered the end of the first game era, and a time when the industry was essentially given up for dead. The second, and we might say modern, era began when the Nintendo corporation started to rebuild the industry in the late 1980s. From its efforts, the game industry as a whole rebounded to surpass the first game era. This story is recounted in detail in several journalistic accounts (Herman 1997; Herz 1997; Kent 2000; Kline et al. 2003; Sheff 1999), and is briefly outlined here.

Much like the invention of radio (Douglas 1987), the home video game industry began with hobbyists and enthusiasts before eventually transitioning to a corporate structure. These original tinkerers were nearly all male, young, white, middle class, and engaged in computer programming or engineering as part fun and part learning. They built and adapted out of insatiable curiosity, to amuse themselves, and to advance the endless holy quest to discover How Things Work.

The first known video game dates back to 1951, when a Cambridge University computer science graduate student named A. S. Douglas created a “naughts and crosses” (more popularly known in the US as Tic-Tac-Toe) game, followed a few years later by a US government nuclear research scientist named Wally Higginbotham, who invented a tennis game using the ballistics programs from the military (Herman 1997). The first team programmers emerged from MIT in the late 1950s and early 1960s, populated by science-fiction loving young men who programmed the aptly titled *Spacewar!*, which in later iterations pioneered multiplayer modes and even networking (Levy 1994; Montfort 2001). One of *Spacewar!*'s original enthusiasts, Nolan Bushnell, saw the commercial potential and eventually founded the first large-scale gaming corporate success, Atari. Bushnell, however, clashed with another inventor, Ralph Baer, who is generally credited with the title “father of video games” for his work on the first home console, the Magnavox Odyssey, which was released, without much fanfare or success, in 1972 (Kent 2000). Bushnell's simpler tennis game *Pong* was the medium's true breakout hit, and inspired a wave of innovation, copycats, trade disputes, and corporate interest, plus the transformation of public arcades into video game hotspots (Herz 1997).

Atari's corporate culture was a fraternity of engineers fueled by sex, drugs, and rock ‘n’ roll (Kent 2000). The hothouse atmosphere led to a continuous stream of innovation, often at the expense of any sense of professionalism. There were few schedules, no marketing plans, and little long-term strategy. It was as if the MIT hacker ethic had been given a fantastic toolbox of gadgets, encouragement, and narcotics (Levy 1994). This culture would lead to many of the industry's milestones, including the Atari 2600 home console, which was its first widespread success. It also led to spectacular corporate skullduggery and the single largest corporate collapse (to that time) in US history, when Time Warner acquired, and then largely destroyed Atari by focusing on mass production over quality. By 1983, Atari was losing \$500 million per year and had collapsed Warner's stock. The following year, Warner sold Atari assets to cut its losses. By 1986, total home game sales had dropped from \$3 billion to \$100 million, and the industry was seemingly left for dead.

Unsurprisingly, pundits of the time were quick to label video games a passing fad. The industry's collapse was easy to explain as just another example of short attention-span American tastes: first disco, then Pet Rocks, and Pac-Man. However, a closer look at the demographics and demand shows that video games helped usher in a new kind of consumer who was increasingly aware of new tools and new possibilities. Having played video games, this consumer was not going to go back to wooden blocks and dice. The change was of course more global than just video games. Consumers were beginning to embrace home computers, compact discs, and the concept of digital systems as convenient and powerful entertainment tools. Analysts assumed that Atari's collapse meant a return to more simple one-way broadcast consumption patterns, but the resurgence of the industry in the late 1980s and the explosion of network culture in the late 1990s suggests that those early game players were exposed to a world of challenge, interactivity, and community, and the genie was permanently released from the bottle.

This pattern is reinforced by data on free time and disposable income. For Americans, the former has steadily dropped, while the latter has steadily risen, meaning that consumers spend more to enjoy less time. Consider a board game. It is slower, if cheaper, than its video game counterpart. Someone with more money, and less time, is likely to adopt the video version. From 1970 to 1994, Americans went from spending 4.3 percent of their incomes on recreation and entertainment to 8.6 percent, while working more hours and having less free time (Vogel 2001). Demographic cohorts played a role as well. The group coming of age in this era, popularly known as Generation X, has continued to be a source of game players while new cohorts of young people have added to the total audience. A casual observer of the industry was typically quick to assume that games were a child-only phenomenon, but this incorrect (but still widely held) view is in fact driven largely by the extremely successful marketing efforts of the Nintendo Corporation, who made their system entirely child-oriented. The later boom of adult-centric systems heralded by the original Sony

PlayStation showed that Generation X and younger cohorts would continue to play into adulthood, but the stereotype often lingers today, especially among members of the Baby Boom generation and older.

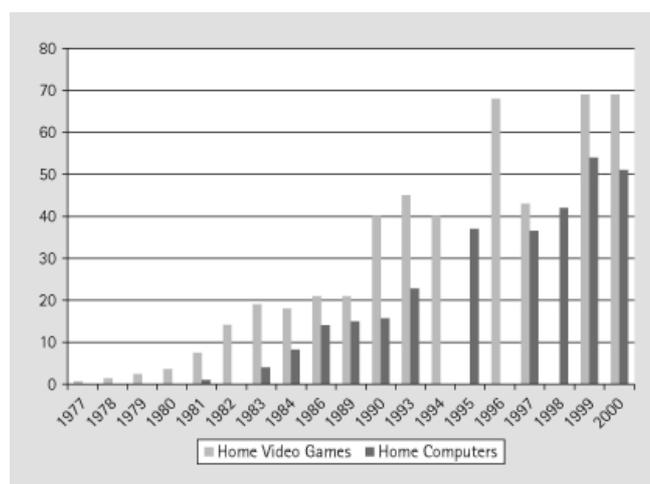
This same cultural sea change of the 1980s had a dramatic effect on where and how people played games. The thriving, if sometimes suspicious-looking video arcades, were eroded by public concerns over safety and hygiene (Herz 1997) in an era of conservative political values. Arcades slowly transformed into youth-oriented daycare facilities at shopping malls, while game players were driven into private home spaces. In reaction, multiplayer home game consoles boomed throughout the 1990s, and the pump was primed for the rise of home-based computer networks to link players with each other. So, as home computer prices dropped and diffusion rose, the audience of players was ready to adopt a new, networked game culture. This movement coincided with a larger cultural shift toward the home; with civic institutions on the decline and convenience driving entertainment consumption for a more and more overworked and separate populace (Putnam 2000), home game systems and computers took off. In fact, in the crucial decades of the 1980s and 1990s, games functioned as a stepping stone to the more complex and powerful world of home computers, *preceding* computers at every step of adoption, and have continued to be in more homes since their arrival (see Figure 10.1).

Modern gaming (2004–)

During the first decade of the twenty-first century, the percentage of American adults with access to the Internet increased from 37 percent in 2000 to 71 percent in 2010. Fast, broadband connections rose as well, with slower dial-up connections beginning to decline from 2001 (Smith 2010). Meanwhile, by the end of the decade, video games had become commonplace in the American household, cutting across age and gender demographics. In 2011, estimates placed 53 percent of all American adults and 72 percent of American households playing some form of video games (Entertainment Software Association 2011; Lenhart et al. 2008b). And despite the long-held stereotype of the young male gamer, both independent and university research (Griffiths et al. 2003; Williams et al. 2008; Yee 2006) found this stereotype not to be true. In fact, according to the Entertainment Software Association (Entertainment Software Association 2011), women aged 18 or older represent more of the game playing population (37 percent) than boys aged 17 or younger (13 percent). ↴

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Figure 10.1:



Consoles and computers come to the home, 1977–2000 (% penetration). Data Source: Consoles, Nintendo of America, Amusement & Music Operators Assoc., *The Economist*, www.icwhen.com; Computers, National Science Foundation, Roper surveys, Census Bureau, Statistical Abstracts of the United States

In addition to broadband surpassing dial-up for the first time, 2004 and 2005 saw three other important developments: the release of the most popular massively multiplayer online game (MMO) of all time (also see *Virtual Worlds*, below), the first of a new generation of video game consoles, and the rise of social network sites.

World of Warcraft (WoW) was released during the holiday season of 2004 and became the best-selling computer game of 2005 (Entertainment Software Association 2006). It (or one of its subsequent expansions packs) was the best-selling computer game of 2005, 2006, 2007, and 2008 (Entertainment Software Association 2006, 2007, 2008, 2009), and would go on to be the best-selling MMO of all time—with more than 11.5 million monthly subscribers—and the third best-selling computer game of all time (Blizzard Entertainment 2008; Guinness World Records 2010). As of March 2011, Nielsen (2011) estimated that 7 percent of all game players play *WoW*, and 35 percent of all minutes spent playing non-casual PC games is spent on *WoW*, more than any other game. As a reference point, the game *League of Legends* ranks number two on the list, yet only occupies 5.5 percent of all minutes spent playing PC games.

p. 200 The next year, in 2005, a new generation of consoles was launched, starting with Microsoft's Xbox 360, and subsequently followed by Sony's PlayStation 3, and Nintendo's Wii, both released in late 2006 (Shippy and Phipps 2009; Takahashi 2006). These new boxes featured several novel advances in features: the Xbox Live online gaming system created the largest online community and storefront for consoles; the PlayStation 3's powerful processor advanced graphics technology to impressive levels and doubled as a Blu-ray disc player (at a time when standalone Blu-ray players were more expensive); and the Wii emphasized casual games and a popular motion-sensor controller (since copied by the other two companies in late 2010). As a result of this competition and innovation, the game industry saw a 60 percent increase in annual computer and video game sales between 2005 and 2008 (from 6.9 billion dollars to 11.7 billion dollars), after having held steady for most of the earlier part of the decade (Entertainment Software Association, 2011).

This was not the first generation of game consoles to have integrated Internet access, but was the first mainstream adoption: the previous generation's Sega Dreamcast (released in 1998) and Microsoft Xbox (released in 2001) had a built-in modem and Ethernet port, respectively, and Nintendo's GameCube (released in 2001) and Sony's PlayStation 2 (released in 2000) had optional accessories for online connectivity (Hagiwara and Oliver 1999; Takahashi 2002). Such a connection not only allowed for the playing of network games, but for the download and/or streaming of digital media. More importantly, the connection enables these increasingly powerful digital boxes to fulfill other roles within the household and to compete with other hardware categories. For instance, all three of these latest generation consoles allow for the streaming of movies using Netflix's proprietary Watch Instantly service. In addition, these consoles have some form of integrated web browser. In many ways, game systems are approaching the mythical convergence of set-top boxes prophesied in the 1990s (Negroponte 1996), and can be viewed as a Trojan Horse in the vicious corporate competition to get such a box into homes.

Another important event was the mid-decade launch and diffusion of social network sites (SNS); boyd and Ellison (2007) define SNS as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system.” While initially SNS had little relevance to gaming, as they matured and added more features the social connections afforded by the sites allowed for the development of casual games users could play with their friends in a persistent environment (Kirkpatrick 2010; Taylor 2010). A driving force of SNS games was Facebook, which initially was restricted to university students at elite universities, but by 2005 was open to all university and high school students worldwide. In late 2006 it became open to everyone (Kirkpatrick 2010). Since its founding, Facebook has seen exponential growth in its membership, with 845 million by the end of 2011 (Facebook 2012). In 2007, the site introduced the Facebook Platform, which allowed third-parties to develop applications that could take advantage of the social connections between friends. Despite

the fact that Facebook thought games would not be viral enough to be widely adopted among its users, some of the early games, such as Texas *HoldEm*' *Poker* and *Scrabulous* (a Scrabble-like game), became quite popular very quickly (see *A Casual Explosion*, below).

p. 201 With the rise of inexpensive (often free) casual games and a worldwide economic downturn, the trajectory of the gaming industry may again change. While it is hard to forecast games sales during a recession, some market research firms anticipate a decrease ↘ in retail sales of games in the coming years, both due to the state of the economy and the novelty of the latest generation of gaming consoles having worn off (especially the casual games of the Wii). After the steady increase in game sales, revenue decreased by 10 percent in 2009, and this trend is expected to continue (Entertainment Software Association 2010, 2011; Taylor 2010). However, usage of cheaper, less profitable (per user) social network games is expected to increase in the coming years (Taylor 2010), so while receipts may go down, overall play may actually increase.

The state of the industry may be in a transition period, but the widespread adoption of the Internet and social network sites has changed gaming. Networked gaming gives people more choices as to what games they can play and with whom they can play them. New games are often expected to be networked as a common feature, and much of the industry is interested in moving toward online gaming for both control and profiteering. Games that require connectivity to a centralized server system are more difficult to pirate, and piracy has been a particular challenge to the industry, especially from China. And, in addition to the social connectivity and networking of SNS sites, online gaming also offers the possibility of streaming services, meaning that the graphics processing formerly done by PCs or consoles might increasingly be moved to cloud-based server farms. Two start-ups, Gaikai and Onlive, began experimenting with technology and business models and revealed their advances in 2010. The future of gaming is thus likely to include a mix of social connectivity and continuing advances in technology as players seek each other as much as they seek games.

Major issues in games and online gaming

Virtual worlds

p. 202 Virtual worlds originated from literary ideas, most notably the concept of cyberspace originating in the novels *Neuromancer* (Gibson 1984) and *Snow Crash* (Levin 2003; Stephenson 1992), then further popularized by movies ranging from *Tron* (Lisberger 1982) to *The Matrix* (Wachowski and Wachowski 1999). These fictions helped usher in the notion of a virtual space in which a representation of the user appeared on the screen in some way, either as a text-based character or a fully modeled 3D figure, or “avatar.” The earliest incarnations were text-only games, usually called MUDs (multi-user dungeons), starting in 1978, in which networked players interacted in a fictional world. An important innovation was that the world was always on, or “persistent.” Unlike most games with a start and an end, these ones kept going whether the players were there or not, giving them a more realistic feel. The first graphical version, *Meridian 59*, appeared in 1996 (Colker 2001), long before the Internet had become mainstream. These games began to be known as “massively” multiplayer online role playing games, or MMORPGs (often shortened to MMOs). “Massively” referred to the sudden appearance of very large player communities playing together. Other games capped out at 16 or 32 players, yet the ↘ MMOs could have hundreds or even thousands on at the same time. This was a case where the change of scope changed the nature of the experience. Rather than small, occasional teams populating a space, virtual worlds fostered communities and small societies.

Meridian 59, and most games to follow, borrowed from the culture of *Dungeons & Dragons* and the fantasy novels of J. R. R. Tolkien (Pearce 2001). Even today, nearly 80 percent of all virtual world spaces are fantasy-oriented (White 2008). Early games such as *Ultima Online* and *EverQuest* eventually reached a niche

profitability (Mulligan and Petrovsky 2003), but it was not until the highly successful *World of Warcraft* launched in 2004 that virtual worlds began to hit the mainstream. *WoW*, as it is still known by its 11.5 plus million players, is the most profitable and popular of the Western virtual worlds. Chinese and Korean markets are likely to be larger, but verifiable information in the sector is hard to come by. Eastern games also tend to operate by users buying time cards, where Western titles tend to use monthly subscriptions. This makes defining a “user” or “regular user” more art than science.

Who plays MMOs and why? Recent research suggests that the player base is typically 80 percent male, with a mean age of about 35. Most players are middle class, educated, and often technically savvy. They play for challenge, and to appreciate the virtual environment, but most often to interact with others (Griffiths et al. 2003; Kline and Arlidge 2002; Williams et al. 2008), and accordingly many titles have vibrant social communities, both on and offline. Estimates suggest that roughly a third of players knew each other before playing, with perhaps 5 to 10 percent of the new friendships migrating to the “real,” face-to-face world (Williams et al. 2006; Yee 2006).

Coming as they did before the Facebook moment, these spaces were thus harbingers of the move to online social networks more generally. They have also been an attractive site for research, and perhaps more academic focus has been focused on them than is warranted by their sheer numbers. Scholars have studied them for their interpersonal interactions (Bailenson et al. 2005; Yee and Bailenson 2007; Yee et al. 2007), learning (Steinkuehler 2005), teamwork (Huang et al. 2009), cheating (Consalvo 2007; Keegan et al. 2010), community dynamics (Pearce 2009; Taylor 2006), identity and role playing (Nardi 2010; Williams et al. 2011), social networks (Huang et al. 2009), economics (Castronova 2001; Castronova et al. 2009), and many other topics.

Researchers have also flocked to study these spaces because they represent what Castronova has called “virtual petri dishes” (Castronova 2005, 2006). Social scientists have typically been able to get far more self-reported data than actual behavioral data, but these spaces suddenly presented a contained, observable environment populated by real people. This makes them potential proxies for studying offline behaviors in a safer, unobtrusive, and less expensive way, although there are certainly risks with doing such work badly (Williams 2010). Virtual worlds remain a vibrant genre within video games, but recently they have been surpassed in terms of raw numbers by a far more mainstream phenomenon, also online. ↵

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A casual explosion

Casual games are defined by their opposition to “hardcore” games. Where a hardcore game takes commitment and focus, and features cutting-edge graphics and complex game mechanics, casual games require no real dedication, feature simple graphics and are often easy to learn and play in a short time (Juul 2010). Yet despite the moniker, so-called “casual” gaming is the largest, most tectonic force in the history of the medium. It is also a case study in how supply, demand, cultural shifts, and new technologies can create an industry almost overnight. First, consider the numbers behind casual gaming. Whereas the target population of “mainstream” console gaming is males 18–35, casual games target everyone and attract a 60 percent female audience (Taylor 2010). Typical console games cost \$15–25 million to develop, last about 3 months, and reach from 500,000 to four million players. Typical social and casual games cost \$250–500 thousand to develop, last about 9 months and reach 10–50 million or more players (Taylor 2010). A console game is played for hours, a casual game minutes. In the US there are about 350 million dedicated game-playing devices, not including cell phones. These are home consoles and portable game players—in other words, the traditional, dedicated game-playing audience. From 2009–10, there were about 510 million accounts on social and casual games, up from virtually zero two years before. In other words, casual gaming in only two years appeared and rapidly surpassed the 35-year-old mainstream game industry.

Where did this movement come from? It's important to note that there have always been a lot of casual game players, but that they have been systematically prevented from playing by social and commercial forces. When early games burst onto the scene in the late 1970s and early 1980s as a cultural fad, the first players were not the stereotypical young men, but in fact were largely adults. The rise of Reaganite and Thatcherite social policies in the early 1980s coincided with a strong infantilization of games and electronic media in general. One theory is that social guilt over reduced time and resources spent on children manifested itself in animosity toward video games, VCRs, and cable television (Williams 2006a). These “electronic babysitters” caught most of the brunt of the guilt parents felt from spending less time with their children. More women working longer hours meant opportunities, but also significant fretting over child care. It was much easier to blame the devices which often took over the childcare role, than to look at the social forces and the bigger picture (Faludi 1991). So, it is perhaps not surprising that the same adults who happily plonked their quarters into *Ms. Pac Man* or *Asteroids* in 1981 would only two years later feel ashamed to admit it (Williams 2003). The middle-class dentist happily featured in a *Star Wars* game ad in 1980 was by 1982 replaced by quotes from an adult in an arcade in *Time's* cover story: “I’d really rather you didn’t use my name. This is my secret place” (Skow 1982). By 1983, adults were effectively banned from arcades by social forces, and the simultaneous collapse of Atari and the home game industry made it appear that grown-ups were never again to be interested. Similar effects could be found among women, who were generally socialized away from technology already. The rise of Nintendo and its squarely child-centric marketing only reinforced these trends.

p. 204 Yet another large force limiting adults has been the industry itself. Game development has been the province of hard-core game players who largely make games for themselves. The gradual corporatization of the games industry has moved developers towards thinking about audiences other than themselves, although this remains a challenge even today. Still, the exceptions tend to prove the rule: the biggest hits of the 1990s and 2000s tended to be “surprises” in that they sold a boatload of games to adults and especially to women. Games such as *The Sims*, *Myst*, and even the much-mocked *Deer Hunter* showed that the appetite for games was far broader than the supply had suggested, or developers realized.

However, the removal of those forces by corporate professionalization, demographic changes, and the rise of networks has demonstrated that what was lying dormant was in fact a tidal wave of interest. By the mid-2000s, those same children of the Nintendo era had become parents themselves and their desire for play had matured as well. The difference was that their time and their social networks were radically different. As Putnam (2000) wrote in his impactful *Bowling Alone*, adults have been largely sequestered from each other through media consumption and, we would add, arguably through the rise of atomized suburbs and a car-oriented culture. The combined effect is that there has been an immense demand for not just gaming for adults, but for social interactions in general (Williams 2006b, 2006c). To add to that, the original game players of the 1970s and 1980s have been able to “come out of the closet” so to speak, when geek is chic and gaming is acceptable. And, as Juul (2010) correctly notes, one need not be a hardcore gamer or devote hours on end to enjoy causal games. The brilliance of many casual titles is that they are accessible to anyone with a few minutes and a passing interest in either connecting with friends or even just killing some time. Rather than gamers trying to fit *their lives into* the requirements of complex games, casual games easily fit *into our lives* (Juul 2010).

Casual games are often (if not always) integrated into pre-existing social networks. Consider the case of a game player in three different eras. In 1990, the player had to find someone to come over, and that person had to commit to some significant time to learn and master the game. That was an effectively small roster of playmates, made tougher by the social constraint of not many people even admitting that they “play games.” In 2000, with networks rising, that same player could probably do a lot better simply due to the fact that their potential playmates need not physically visit—although certainly that creates some of its own social capital costs and benefits (Shen and Williams 2011). Nevertheless, the player probably had a slightly

larger roster. In 2010, the same player logs into Facebook and finds a system where nearly everyone they've ever met becomes a potential playmate, and the costs in time and effort have been dropped to near zero. This attracts the legions of the curious, the busy, and those who find games to be an excuse or a reason to stay connected to "real people," rather than the more anonymous spaces of virtual worlds.

p. 205 This meteoric rise demonstrates that a massive pool of demand has been sitting untapped for decades. MMOs, the darlings of researchers, the press, and hard-core ↪ social players, collectively reached perhaps 45 million players worldwide by 2008, across roughly 100 titles. This was a massive expansion of online, networked play, and shocked many analysts. Contrast that with the 2009 case of game maker Zynga, who recorded 188 million players for *just one game*, *Farmville* (Taylor 2010) in just one year. Where most MMOs cost many millions of dollars to make and are considered successes with a few hundred thousand subscribers, Zynga introduced the cheap title *Treasure Island* in April of 2010 and had 24 million players after only three weeks (Taylor 2010).

These are changes of several orders of magnitude occurring to the game-playing base, and they are radically changing what it means to be "a gamer." Although the stereotype of the adolescent boy was broken by 2000 anyway, popular culture has been slow to realize it. This new cultural shift towards casual games and online social networking will continue to change that image. When combined with the demographic trends of new cohorts playing at 97 percent and above (Lenhart et al. 2008a; Lenhart et al. 2008b), gaming is unlikely to decline. Instead, it would appear more plausible that as older cohorts die off and take their lower playing rates with them, the overall rates of game play will only increase. Gaming is not simply here to stay, but is becoming more and more integrated with our daily lives, lived in the blurry space between online and off. What remains to be seen is how competitive forces will shape the casual game industry as the initial waves of novelty and first-mover advantages of the current market leaders dissolve.

Children's spaces

A 2010 report from the Kaiser Family Foundation (Ridehout et al. 2010) found that children aged 8–18 in the United States spent an average of an hour and a half each day playing interactive games, up twenty minutes from just five years earlier (Roberts et al. 2005). As with all child-oriented media, parents and policy-makers continue to be curious and suspicious about the effects video games may be having on children. The evidence is hotly disputed from the pages of academic journals to the halls of the US Supreme Court. Despite the fact that some scholars (Anderson et al. 2010) say the evidence for a causal link between game violence and aggression is greater than any other medium, other scholars have called the link into question or have questioned its degree of impact (Ferguson and Kilburn 2010; Sherry 2007). It may therefore be more useful to look at the use and importance of online play in everyday life. Indeed, Henry Jenkins and colleagues (2006) identify play and simulation as two of the essential skills necessary for youth to be literate and culturally competent in a new media landscape.

p. 206 Ito and colleagues (2010), in bringing together a diverse range of ethnographic studies they conducted, identified at least five "genres of practice" among youths playing games. For some, games are just a means to kill time to fill in the gaps during their day. Others use games for socialization with friends and family. A third genre of youth ↪ game play is recreational game play, where competition is the primary motive. Related to this is organizing and mobilizing game practices, where social arrangements are necessary for competitive success (like guilds in MMOs). A fifth genre of game play is augmented game play, where gamers engage with secondary sources about the game, such as fan sites or modification hacks. Many of these genres are practiced in games intended for audiences of all ages, but there is no shortage of Internet games targeted for youth play.

One youth-oriented space that has been studied in depth is *Whyville*, an online virtual world/serious game (Kafai 2010). With over 4.2 million members aged 8 to 16 years old (68 percent female), it is one of the few youth-oriented virtual worlds designed for educational purposes. An average of 14,000 players log in each day, for an average of 40 minutes per login. Once online, players can customize their avatar and communicate with other users, much like any other virtual world (Kafai et al. 2010b). However unlike a typical virtual world, they can also participate in dozens of different educational activities. Players earn a virtual salary, and the most prominent way to build one's salary is through the successful completion of science games. These can range from single player games like Hot Air Balloon races (which require an understanding of the relationship between temperature and gas density and directional forces), to multiplayer collaborative games like Solstice Safari (where players work together to collect data about sunrise and sunset at different parts of the world), and multiplayer competitive games like Smart Cars races (where players must create light paths to navigate photosensitive tires, requiring an understanding of light, energy, and mechanical motion). In addition, *Whyville* has community science games, such as a virtual epidemiological outbreaks or virtual ecological disasters, that impact all users, who can then choose to engage in a new educational opportunity (Kafai et al. 2010a; Neulight et al. 2007).

Some sites/games, such as *Club Penguin* and *Neopets*, have been quite profitable, to the point that the former was purchased by Disney and the latter Viacom (Barnes 2007; Ito et al. 2010). *Club Penguin* is a typical virtual world, but instead of taking on human-like avatars, children create and move around the world as cartoon penguins that reside in personal igloos. Because the target audience is aged 6–14, *Club Penguin* places a heavy emphasis on child safety, by including automated filters in user chats and having moderators monitoring behavior. While basic game membership is free, players must pay a monthly fee in order to have full customization of their avatar. *Neopets*, a website that allows children to purchase and take care of virtual pets, is reminiscent of the Japanese toy Tamagotchi and the Pokémon franchise, as players can also train their virtual pets to fight one another. Players use virtual currency known as Neopoints (which can be won through game play) and Neocash (which can be purchased using real money). Games like *Neopets* have come under criticism for encouraging capitalism in youth by emphasizing the importance of earning and spending Neopoints (Grimes and Shade 2005; Seiter 2005), but Ito and colleagues (2010) argue that these spaces are often flexibly designed, allowing youth to explore different genres of play that best meet their interests and needs. ↵

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Serious games

Serious games are games with a primary purpose other than entertainment, such as education, training, or behavioral change (Ritterfeld et al. 2009). A movement towards designing and studying such games was spearheaded by Ben Sawyer and the Foresight and Governance Project at the Woodrow Wilson International Center for Scholars (Sawyer 2002). Drawing on the title of a 1970 book by Clark Abt (1987), Sawyer's Serious Game Initiative (and its subsequent spin-offs such as Games for Health and Games for Change) brought together scholars, practitioners, and designers with the goal “to help usher in a new series of policy education, exploration, and management tools utilizing state of the art computer game designs, technologies, and development skills” (<www.seriousgames.org>). Simultaneously, many academics had been thinking about the use of games as educational tools minus the specific label “serious games” (Gee 2003; Prensky 2006).

Multiple attempts have been made to come up with taxonomies for serious games. Sawyer and Smith (2008) classify them at the highest level based on the purpose (games for health, advergaming, games for training, games for education, games for science and research, production, and games as work) and industry (government and NGO, defense, healthcare, marketing and communications, education, corporate, and industry). Each purpose further has its own unique sub-taxonomy. Ratan and Ritterfeld (2009) classify serious games on four dimensions: primary educational content (academic education, social change,

occupation, health, military, and marketing); primary learning principle (practicing skills, knowledge gain through exploration, cognitive problem solving, or social problem solving); target age group (preschool and below; elementary school; middle and high school; and college, adult, and senior); and platform (computer and non-computer). Both Sawyer and Smith (2008) and Ratan and Ritterfeld (2009) also counted the number of titles that would fall into each of the proposed categories and found that serious games are predominantly geared towards academic education (it is hard to compare the taxonomies after that, as Ratan and Ritterfeld's second most populated category was games for social change, and many of these games Sawyer and Smith classified as advergaming).

While Ratan and Ritterfeld (2009) found that 90 percent of all serious games were PC games, they did not single out Internet versus non-Internet based games. It makes sense that they would not make this distinction, as educational games existed on the computer long before the Internet (Ito 2008). While online gaming can be leveraged for serious gaming purposes (Derryberry 2007; Gibson et al. 2007), the goals of many serious games do not inherently require online connectivity. In addition, some serious games will rely on the Internet for functionality, whereas other serious games will rely on the Internet for distribution only (Sawyer and Smith 2008).

p. 208 One of the most popular first-person online shooter games is in fact a serious game: *America's Army* (Shilling et al. 2002). Developed as a recruitment tool for the US Army, the game was released Independence Day Weekend 2002 and had 400,000 downloads in its first day of availability. The game's website averaged 1.2 million hits per second in its first month (Lenoir 2002). Despite its entertainment value, its mainstream popularity, and its high ratings by leading game review magazines, it was thinly veiled to the audience as a serious game. The Army, facing a long decline in its recruiting goals, believed that exposing people to a simulation of basic training and the development of a military career in an emotionally entertaining fashion would spark the interest of game players. And in the process of getting people to download the game, the Army would also link players to other recruitment tools and websites (Li 2003). Part of its success was that it was a serious game that was also seriously fun (Shen et al. 2009).

Another serious game that harnessed the power of the Internet was *Darfur is Dying*, the winning entry in a competition sponsored by mtvU, the Reebok Human Rights Foundation, and the International Crisis group. Designed by graduate students at the University of Southern California, the online game (hosted on mtvU's website) depicts the hardships of living in the Darfur region in the Sudan, where the government supports the oppression and genocide of black Africans by the Janjaweed militia. Players assume the role of a Darfuri man, woman, or child, and try to find water and bring it back while avoiding militia jeeps. Players who fail are told of their character's likely fate, which usually involves beating and (in the case of females) rape. It also has a second part, where players learn to manage the scarce resources in a refugee camp. Integrated into the game are tools that allow people to email their friends and invite them to try the game for themselves and encourage them to write letters to their government officials to support pending legislations that would help resolve the humanitarian crisis in Darfur (Jones 2008; Raessens 2009; Thompson 2006).

Some (Bogost 2007; Brown 2007) have critiqued the effectiveness and rhetoric of games like *Darfur is Dying*, but one study found that Internet-based games for social change do have political impact. Neys and Jansz (2010) first interviewed developers of six political Internet games: *Airport Security* (a game about airport security policy), *Darfur is Dying*, *McDonald's Video Game* (a game that looks at McDonald's health and business practices), *Peacemaker Game* (a game about the Israeli-Palestinian conflict), *September 12th* (a game about Bush's War on Terror), and *Super Columbine Massacre RPG* (a game about the Columbine High School shooting). They found, in asking the developers their motivations, that these games serve three functions: informing players about an issue, persuasion (creating awareness and stimulating discussion), and engagement (inciting players to take action). After interviewing the developers, Neys and Jansz invited game players to try out one of these games. Before playing the game, participants were asked to write

everything they knew about the topic. After playing, they were asked how playing the game affected their knowledge and opinion about the topic and whether they intended to learn more about the issue and/or tell their friends about the issue. The results suggested that these games did in fact lead to change (or at least self-reported, short-term change) in knowledge, opinions, and possible future actions. While the methodology could make few claims about external validity, this is one of the few empirical studies to look at the effectiveness of online serious games across multiple titles.

p. 209 Serious games challenge the perceptions that video games are solely frivolous, leisurely activities or that they are bad for youth. As previously mentioned, Jenkins and colleagues (2006) see play and simulation as essential skills in the learning practices of youth. And serious games, such as *Darfur is Dying*, have the potential for social impact.

Conclusion and research directions

Video games have grown from a niche fad into a fully mature and commercialized medium, with all of the speedbumps and cultural conflicts that implies. From their earliest days as simple games played by only a handful of enthusiasts to their current position commanding billions of dollars and hundreds of millions of eyeballs, games have traced a history reflecting our own in modern industrialized societies—as we have become atomized into disparate communities and then reconnected in new forms via the Internet, so have games. Where games were once argued to be a medium that was as abominable as rock ‘n’ roll or comic books, they are nevertheless as inevitable as the seasons. This does not mean that they are embraced by all, or even understood by most. Video games—and all of the unknowns researchers have yet to discover about them—are now a cultural force simultaneously condemned for their corrosive effect on our values at the same time as they are embraced as a positive force for change, learning, and “real” experience.

This same sense of evolution, change, and novelty could just as easily be used to describe games research as well. The early days of research were marked by studies about “What do games do to us?” in communication research and a separate tradition around games and simulation with roots in military applications and table-top games. Today, the research community surrounding games comes from communication, psychology, cultural and critical studies, sociology, and now even business, economics, and computer science. It's not so much interdisciplinary as a collection of one-time refugees from these disparate fields now commonly linked by their interest, affection, or mistrust of the medium. Methodologies range from content analyses and experiments, to participant observation and textual analysis, to econometrics, and feature both quantitative and qualitative work. Whereas in 2000 there were few who would risk being labeled as “game researchers” for fear of being denied tenure or collegial respect, the field is now well out of the closet. It features more than a dozen conferences a year, healthy divisions within other major groups, a handful of active specialty journals, and a vibrant online community with listservs and growing archives for scholarship. The games bibliography site Digiplay Initiative (<http://digiplay.info/digibiblio>) now features over 3,000 citations across these various disciplines. Thus, as society comes to accept games, so also has the academy. It is conceivable that in the not-too-distant future, games studies will be a common department on college campuses, just as cinema transformed from a “low” art to one accepted as worthy of scholarly attention (Gabler 1999). This will be one more piece of evidence that the medium has entered the mainstream.

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