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**YOU ARE LIKELY TO BE EATEN BY A GRUE: HOW COMPUTER  
GAMES ARE CONSUMING MODERN CULTURE**

Douglas S. Alexander

Thesis submitted in partial fulfillment of the requirements for the degree of Master of  
Science in Information Technology

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ROCHESTER INSTITUTE OF TECHNOLOGY  
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May 10, 2002

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## **Abstract**

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Computer games represent an area of untapped, unappreciated potential in the human-computer relationship. Having long been considered “low culture” and unworthy of scholarly attention, the focus on games is intensifying as the field of ludology emerges. The first game was created forty years ago, and since then games have branched out from their traditionally young male user base and gained popularity with both adults and females. Violence in and addiction to games remain controversial topics, but the threat posed by games fades a bit in comparison to the fascinating insights they give us into literature, art, and cinema. Their cultural impact is also evidenced by the wave of nostalgia that is bringing back video games from the 1970’s and 80’s. Online gaming is changing the way people experience interactive entertainment in their homes, and massive multi-player online worlds are edging closer to becoming simulations of offline society. The significance of computer games can no longer be denied, and their future is bright as technology and game theory continue to create astounding and entertaining virtual worlds.

## Introduction

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Games, in all forms, have been around almost as long as human have been sentient. So it's appropriate that computer games have been around almost from the dawn of the computer age. For more than 30 years, people have been taking an otherwise cold, logical machine and turning it into an incomparable instrument of entertainment, fantasy, and escape. A person from the 1930's suddenly transported to the present would be astounded at the magical images on computer monitors, and even more struck by how easy it is for humans to actually influence how those images act and react. Computer games are the first hint of a movement that draws on books, sports, *Dungeons & Dragons*, television, movies, board games, and war and creates...something else.

We call them "games" because up until now, that's how they've been marketed. But as good-looking and compelling as these "games" are now, only a fraction of their full potential has been explored. All that's been said about the imaginary worlds, extra-sensory experiences, and mind-expanding possibilities offered by computers is embodied in the promise of computer games. The apotheosis of which is a world where actual reality is commingled with digital reality, as it is in William Gibson's seminal book *Neuromancer*. Gibson imagine a world where cyberspace was ever-present and accessible through direct connections to the human nervous system, which among other things allowed people to "enter" the minds of others and experience the world through their eyes. Presently we are far from knowing a reality like that, but based upon all the things computers can do for us right now, even with the "primitive" keyboard, mouse, and joystick interfaces, the possibilities are exhilarating. All the restrictions and affordances gleaned from actually, physically *being there* could be thrown out the window, and in their place would be the purest form of communing with other minds, or at least their creations. Computer games are the first tentative steps toward this sort of imagination sharing, since they allow us to interweave the best elements from all existing media. Anyone who has ever played a game of *Half Life* or *EverQuest* online, in a dark room, late at night with the sound



turned up and the brain completely immersed in the action knows the feeling that your brain has melded with this “imaginary” world, when you become so immersed in someone else’s imaginary creation that you might as well be directly connected to the computer. Anything that can entrain so many minds so completely has real power, and we as the creators of that power are just learning how to harness and use it properly.

If computer games are the progenitors of this kind of power, and they are, why exactly aren’t they treated with more respect by the existing cultural elite? Why do most people who play these fiendishly addictive bits of fun feel they must admit it with a sheepish grin? They should be proud pioneers of this uncharted territory. This kind of embarrassed admission is not generally required for the avid book reader or the sincere movie buff, yet it is *de rigueur* for the self-confessed game player. There is a mechanism at work here that may be related to the origin of computer and video games, their initial impression upon the collective psyche, and their continuing image within the general population. Computer games are regarded by most as pushing the boundaries of computing about as often as television sitcoms are regarded as dramatic *tours de force*. Yet games are arguably far more relevant to the future of computing than “Seinfeld” is to the discussion of modern drama. Conversations about computer and video games are just as likely to gravitate toward words most commonly associated with undesirable, “low culture” elements – “violent,” “addictive,” “seductive,” “hypnotic,” etc. While these public discussions contribute to our understanding of how all people relate to games, they have a tendency ignore the pre-existence of these unsavory elements and regard computer games somehow as having invented killing, compulsion, and sexuality. It’s what Mark J.P. Wolf, in his new book *The Medium of the Video Game*, refers to as a “moral panic,” or a discrepancy between something that is perceived as a threat to society and the subsequent reaction to it. [1] The extent to which games are merely a reflection of modern culture, as opposed to how they amplify our most hated values, is not a conversation that should be limited to computer games alone. The effect that the games’ most salient feature – interactivity – increases that amplification to dangerous levels, falls squarely on the side of the topical, and is perhaps the most important social issue facing the computer game industry today.

This thesis addresses the discrepancy between perception and reality with respect to computer games, and also attempts to explain the significance of the numerous points of intersection between modern culture and games. As Wolf says, “Video games have become well

integrated into other cultural forms and media, and yet are often overlooked as a cultural influence, despite a long and prominent presence in American culture.” [1] This is my contribution to the growing effort to give computer and video games more positive, constructive attention.

### ***Societal Impact of Computer Games***

Probably the most common impression of computer and video games is the one based upon popular notions of the gamers themselves. The overriding image of the modern game-player is very male, very adolescent, and very violent – thanks in no small part to events such as Columbine and disproportionate media attention to profiling the “teenage misfit” who plays *EverQuest* and *Quake* for hours or days at a stretch. Couple these with the popular perception of the games themselves as filled with violence and virtual gore and games take on an insidious appearance. Yet the reality is something else altogether. It’s true that teenage boys sitting at the computer or the family TV set make up a good portion of the gamers out there, but they no longer dominate the demographic landscape. Females of all ages are taking up the controllers, though perhaps not always for hours at a stretch. [2] The games themselves go far beyond just guns and violence as well – many of the most popular games today come from kid-oriented franchises like Nintendo’s *Pokémon* or wildly successful simulations like *The Sims*. Today’s gamers can experience a wide range of game styles, many of which would have been impossible without computers. A small but significant fraction of titles are even beginning to creep into the territory of simulations and away from the traditional definition of “games.” This broadening of the genre has also drawn in a surprising number of new gamers to the fold, people who might never have been interested in the familiar “shoot ‘em up” variety of games but who will sit for hours exploring peaceful, non-threatening virtual worlds or playing cards online with other net denizens.

### **Violence and Addiction**

A proper discussion of computer games is not complete without addressing game violence. So much has been written and so many hands wrung over the prospect of today’s youth (or those who are equally impressionable, regardless of their age) being exposed to excessive, imaginary-but-realistic violence in certain popular computer games that it bears closer

examination as well as a cursory review of the scientific literature. The inclusion of exaggerated violence is almost expected from certain game development companies, and this kind of content has a following among “hardcore” gamers, but is it as bad an influence as some people claim? Would the games that include the blood and gore be any different, better or worse, if it were all removed? What is the difference between this sort of violence and the realistically violent, vicious scenes that can be found in many movies? Similarly, the concept of being “addicted” to video games is one that has received much attention in the popular media, and there are some signs that certain people are susceptible to excessive or obsessive gameplay. But while congress and worried parents raise concerns about their children becoming video game zombies, relatively little scholarly literature exists studying both violence in and addiction to video games, thus leaving both issues wide open for vague claims by advocates and opponents alike. No conclusions can really be made until more study has been completed, but what should those studies be and how concerned should we be at the moment? The answers to these questions aren’t easy, if they’re possible at all, but I will discuss the issues and the research to date.

## **Culture**

Computer games are also emerging as a cultural influence, and after years of insistence by gamers they are being regarded as a legitimate field of academic study. The existence of a “game culture” will be explored, along with the cultural contribution of the games themselves, and it is surprising how many nooks computer games have infiltrated in their short time on the planet. This infiltration can be interpreted as a harbinger of doom by some who feel that games are nothing more than a waste of time, or (as I prefer to think) a sign of how games deserve a more permanent role in the pantheon of art and literature. Indeed, there are already rumblings of defining the term “ludology,” or the theory of games, as a precursor to true scholarly discussion. If it indeed turns out that theses like this one are just early noise in a yet-to-be-focused academic subject, then we should all feel lucky to be getting in on the ground floor of what promises to be a spectacular edifice.

## **Narrative**

Computer games have also expanded into areas that were heretofore the realm of books and movies. It used to be that games had little or no context surrounding them – there was no



reason, really, that the little ship at the bottom of the screen in Space Invaders was supposed to shoot the descending aliens, nor was there a lasting motive for Pac-Man to eat dots and run away from ghosts in a maze. Now, however, the truly world-class games, those that attract and keep followings for years at a time, must have volumes of “back-story” and in-game narrative flow, complete with plot twists, character development, and compelling dialogue. We’ll explore how computer games have invaded such hallowed ground, and where this has pushed the discussion of the narrative experience, as well as what is lacking in computer games as compared to other forms of “storytelling.”

## Movies

A recent spate of new movies based on video games has revived the (hardly dormant) debate about the difference between cinema and computer games. Certainly when it comes to realism today’s computer graphics are approaching photographic quality – the details left to conquer properly are the final, most elusive touches like how facial muscles move during speech and how certain fabrics behave when buffeted by wind. But photorealism itself is not enough. The translation of a satisfying narrative from the silver screen to the computer screen has proven elusive, almost as difficult as the effort to translate the appeal of computer games to full-length motion pictures. In both cases the producers have struggled with fundamental differences between the two mediums, specifically their limitations when it comes to interweaving narrative (in the case of games) or offering interactivity (in the case of movies). Are these two concepts mutually exclusive? Is this a meaningful question? Chapter 4 examines the mutual impact of video games and movies on each other.

## Art

As computer graphics become almost photographic in quality and technology allows unprecedented levels of interaction, many artists are realizing that the digital world holds much promise beyond simply aiding in graphic design. Interactive galleries and exhibitions are starting to show up around the world, and awards are even being given to computer games for their artistic merit. Not everyone in the art world is happy about these developments, and some are wondering (again?) whether art has lowered its standards by accepting entries from the world of entertainment, especially when that entertainment is a multi-billion dollar global business. The stage is set for a classic controversy between the old guard and the new breed, and the question

of whether computer games can also be art is far from being laid to rest. In the meantime, both game designers and artists continue to push the boundaries in very similar areas of interactivity, graphics, and composition, and the digital world creeps ever closer to a coveted gallery space next to Van Gogh and Vermeer.

## Nostalgia

The trailing edge of the computer and video game industry has always contained the old, cast off games that were forgotten once the latest releases were available. Lately these games have returned as wonderful, primitive objects of the video game generation's childhood, and people are holding conventions, scouring flea markets, and lovingly restoring old video game cabinets in the name of recapturing the spirit of the early days of video games. Like any other nostalgia movement, this one is about recapturing the halcyon days of arcades and stacks of quarters as much as it is about the games themselves, but the end result is that video game history is being dusted off and placed on a pedestal. I know my memory was jogged in a joyful way more than once when I encountered the games and hardware of my childhood. Games I hadn't thought of in over fifteen years suddenly jumped off the pages of my research and triggered a surge of emotion, and in those moments I understood completely why the video game nostalgia movement is coming on so strong. This thesis takes a brief look at the motivations behind it and what is being done to revive "dead" games, but in truth this is a thesis topic all its own.

## Online Games

The Internet has been as big a boon for gamers as it has for any other segment of the population. What were once disparate, isolated entities are now massive multi-player communities, whether the games are very simple and embedded in a web page or complex enough to encourage their own economies. But the more online communities evolve and fill their niche, the less they seem to be actual games. Titles like *Ultima Online* and *EverQuest*, both medieval-themed "massive multiplayer online role-playing games" or MMORPGs, exhibit fascinating tendencies to drift away from what their designers intended once actual humans became involved. These tendencies, which follow no global pattern but are instead governed by the whims of the individual players, show all the signs of emergent behavior, which is characterized by a system that behave the way it does "by drawing on masses of relatively stupid

elements, rather than a single, intelligent ‘executive branch.’” [3,18] In communities like these, each player makes decision based upon the behavior of the players in the immediate vicinity, and the consequences of these decisions aggregate to create greater communal patterns such as guilds, neighborhoods populated by a certain class of character, or even an entire economy [4]. Chapter 5 examines the various types of online communities, the problems they have encountered, and their exciting tendency to exhibit emergent properties when they are executed properly.

### **Definition of “Games”**

Before launching into a discussion of computer and video games, a few clarifications are needed. First, the industry tends to make a distinction between “computer games” – games that are played on a standard PC – and “video games”, which are either found in the arcade or on home gaming consoles like the PlayStation 2. I think this dual-name convention is outdated, since consoles have become nearly identical to PCs in hardware and PCs have been able to play console games for over a decade now. Where necessary I will make a distinction between the two, but mostly I use them interchangeably.

Second, in order to talk about computer games, we could use an adequate definition of what a game actually is. In their book *The Study of Games*, editors Elliott M. Avedon and Brian Sutton-Smith offer us this: “Games are an exercise of voluntary control systems in which there is an opposition between forces, confined by a procedure and rules in order to produce a disequilibrium outcome.” [5] This is certainly serviceable, if a bit tautological (as noted by Jesper Juul in his review of the book). [6] We shall run into problem with the bits about “rules” and “disequilibrium outcome,” however, when we examine some of the current crop of successful games and find them to be lacking notable examples of one or the other or both. Juul himself defines games using two points:

- “A game is a pastime with formal and predefined set of rules for the progression of a game session, with built-in and quantitative definitions of success and failure.
- “What goes on in a game is considered ‘unreal’; has another status than the rest of the world.” [7]

There are those pesky rules again, along with the “success and failure” part. The key here is the introduction of “unreal,” which seems appropriate since games are played, and playing can

more or less defined as an activity the outcome of which has no effect upon anything real. Juul also speaks of the “game session,” which feels important if only because games should have a moment when they stop. (This runs head-on into the concept of “game addiction,” especially for frustrated parents, a topic covered further in Chapter 3.)

The truth is that the study of games, computer or otherwise, is still a relatively immature field, beset with problems of identity and definition that other disciplines either solved or pushed under the rug long ago. In his introduction to the first issue of *Game Studies*, a journal devoted to exactly that, Espen Aarseth notes,

“Computer games are perhaps the richest cultural genre we have yet seen, and this challenges our search for a suitable methodological approach. We all enter this field from somewhere else, from anthropology, sociology, narratology, semiotics, film studies, etc, and the political and ideological baggage we bring from our old field inevitably determines and motivates our approaches.” [8]

The inevitable clash of egos and methodologies from these varying perspectives is still being sorted out. A name has also been given to the field, by popular consent: *ludology*, literally “the study of games.” In the end, the viewpoints of all the various disciplines being poured into game study can only enrich the conversation, and whatever differences are uncovered will learn to coexist peacefully and work together to advance the field. No one ever said that scholarship was boring and uneventful - after all, how can it be boring to study a medium that is meant to be fun and entertaining?

## Chapter 1 – A History of Computer Games, 1958-1983

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Most sources speak of the inception of computer games as a revolutionary moment, when the first electronic images of “Tennis for Two” were displayed on an oscilloscope at Brookhaven National Laboratory, and perhaps it was a creative and technological breakthrough. Glorifying this invention, however, ignores the cultural context from which computer games arose. From the 1930’s onward companies had been producing mechanical games like pinball machines, light-gun-based shooters, electric shock machines, and others, for people’s amusement in bars and public places. Pachinko, which probably originated in the 1930’s out of Chicago, was huge in Japan – players launched small metal balls that careened vertically down through a series of pegs, where they had a chance of bouncing into several openings and rewarding the player with more money or extra balls. The principle thing mechanical games had in common was that they involved some element of chance along with a good deal of interactivity – the pachinko player could vary the timing and/or intensity of the initial ball launch, and the pinball player could go one better and use the paddles to redirect the ball and keep it in play. As any good pinball player can tell you, the goal is to remove chance from the equation as much as possible, creating an interactive experience out of a game that is, for most beginning players, a frustrating sequence of launching and losing balls.

### ***Tennis for Two***

So the world was not game-free in the late 50’s and early 60’s, when computers were evolving into more than just vacuum tubes and paper tape. At Brookhaven National Laboratory in Upton, New York, William A. Higinbotham decided that a simple oscilloscope in the lab could be used to entertain visitors during their yearly open house. [9, 10] Higinbotham was himself a pinball player, and he regarded the equipment in his lab (he was the head of the Instrumentation Division at Brookhaven) and saw great promise in the versatility of the computer. So he and his colleague, Robert V. Dvorak, developed a game they called *Tennis for Two*, which quite simply simulated a game of tennis as seen from the side of the court. The net



appeared, edge-on, in the center of the screen, and each player used a button and a dial to return a fast-moving dot to the net's opposite side. It was nothing less than a sensation at the lab's open house in 1959, with people waiting in huge lines to play on a large screen. The authors even thoughtfully included a tweak that would change "gravity" within the virtual tennis world, supposedly to simulate tennis on other planets.

Remarkably, after two open houses, *Tennis for Two* was dismantled and largely forgotten for 25 years. Higinbotham and his colleagues, like most people intimate with higher technology, simply saw nothing special in their invention. To them it had been an "obvious" extension of the scope's function. They were physicists and researchers, working under tremendous secrecy to develop the country's nuclear program, oblivious to the potential indicated by the strong public interest in their little invention. What would they have done if they had known they were the first pioneers in the world of computer games? Probably the game would have been kept up for one more year and a few more pictures taken, but in the end the lab had more serious work to attend to. If it hadn't been for the memory of a magazine editor in 1982, who recalled going to Brookhaven in 1958 and playing Higinbotham's game, this first example of original computerized entertainment would have been lost to history. [11]

### ***Space War!***

The second stop on the computer game timeline came from a more recognizable source – a computing lab at MIT. There in 1962, a close-knit group of computer junkies were given a new toy to play with: the Digital Equipment Corporation's PDP-1. Roughly the size of a refrigerator, the machine is to be used for serious research functions, with a scope screen much like the Brookhaven oscilloscope, except a bit larger. Once again, all the elements were in place for a bit of mischief to be cooked up – smart people, sophisticated machinery, and a good deal of appreciation for science fiction and entertainment. Three students in the laboratory immediately set to work cooking up a program that would be entertaining, mostly with a thought toward showing off their computer to the public during open houses. (In those days, computers were rare enough that people jumped at the chance to visit the labs and see them in action.) In a few months they had come up with a game called *Spacewar!*, in which two players piloted separate ships around a central "gravity well," all the while trying to shoot each other down with

torpedoes. The game shared the competitive, person vs. person aspect of *Tennis for Two*, but the addition of the gravity well confounded the ships' movements, injecting an element of chaos and unpredictability. Beyond that, each player was given one chance to disappear and reappear in a random location on the screen, contributing to the game's unpredictability. *Spacewar!* was a runaway success, both in and out of the lab – the authors saw no reason to hoard their code or put it to commercial use, so instead they simply gave it away. In no time a fair number of all PDP-1s in existence were running *Spacewar!*, with various tweaks and adaptations springing up wherever eager coders could be found. Where *Tennis for Two* went unheralded due to lack of exposure, *Spacewar!* became a phenomenon within the relatively small computing community. This was a portentous occurrence indeed. 1962 was, for two more decades, regarded as the year computer games were born, until that magazine editor remembered *Tennis for Two*.

In hindsight, it's easy to see why computer games, even in their earliest incarnations, were so seductive. They could offer what analog games lacked – the combination of variability, customizability, and that technological mystique that surround early computers. Pinball and Pachinko might offer a different experience every time a ball was launched into the arena, but the actual machinery stayed as it had been built – there was no reprogramming the placement of the pinball paddles or the Pachinko pegs, or to a great extent the rewards meted out during play. The thing that lures every developer to software today lured the code junkies of the 60's to the PDP-1 and *Spacewar!* – they could be tweaked and tweaked again, often for the sheer joy of writing code and watching it execute. (*Spacewar!* actually had as its background a highly realistic representation of the stars in the night sky, which was called “expensive planetarium” by its author because it took so many processor cycles to generate and maintain.) Yet as popular as *Spacewar!* was in the PDP-1 labs, the computer gaming bug did not reach the general public for another ten years at least. It took that long for computing technology to provide a reasonably inexpensive, portable platform that could be used to bring the games to the public, where the dartboards, pool tables, and pinball machines of the era were already the ruling favorites.

In 1970, DEC released the PDP-11, which cost \$10,800, as compared to the PDP-1, which had started at \$120,000, more if the customer wanted to upgrade the standard 8K of RAM(!). The base PDP-11 was only about waist high and resembled a complicated dishwasher, but was much more powerful than its PDP-1 progenitor. Naturally, *Spacewar!* was updated to run on the PDP-11, and two Stanford lab rats had the bright idea to adapt it for use in a public

setting. In June of 1971, they got to work with a variant of the PDP-11 to produce *Galaxy Game*, which came in a nicely finished wooden enclosure and was placed in a coffee shop. [9] A game cost one dime, and players often waited an hour or more for their turn. Still, the game's success came at a cost of around \$20,000, which adjusting for inflation is nearly \$90,000 today. (A subsequent version added several more screens to maximize the return on investment.) By any measure a large amount of capital outlay for a single arcade game, even if it is hand-built and custom-coded. If there had been companies devoted to creating computer games, this expense might not have seemed so daunting, but there simply wasn't an industry for it yet.

### **Computer Space**

Another entry into the nascent world of arcade games was also released in 1971. Called *Computer Space*, it was actually an adaptation of *Spacewar!* created by a student in Utah named Nolan Bushnell. He was taken by the possibilities of the computer game in the commercial marketplace, having successfully run a small business of his own from the time he was a teenager, as well as having worked at a arcade during college. Bushnell was also an avid electronics hacker, one of those kids who always took household devices apart to see how they worked. With his business acumen, knowledge of the "coin-op" industry, and his extensive knowledge of electronic components, he was the ideal person to recognize that *Spacewar!* could be more than just a novelty.

Unfortunately, the computer industry wasn't quite ready to make a success out of games until around 1970, which Bushnell also recognized. It wasn't until 1970 that parts became affordable enough to make a standalone game economically viable. (Had Bushnell known about the *Galaxy Game* initiative, he probably wouldn't have been surprised – this was clearly one of those moments when the ideas preceded the economic feasibility, so that once the concept of a self-contained computer game was even semi-viable commercially more than one eager hacker jumped right on it.) Bushnell created a company called "Syzygy."<sup>1</sup> *Computer Space* was released in late 1971 in partnership with Nutting Industries, housed in a wonderfully futuristic black fiberglass enclosure with swooping curves and an almost anthropomorphic feel. The game itself seemed simple enough – black and white graphics of two alien UFOs chasing one player-

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<sup>1</sup> "The configuration of the sun, the moon, and Earth lying in a straight line." Dictionary.com. Ironically a more apt name than Bushnell realized, given that three projects - two arcade games and one gaming console – were in development simultaneously and would all be released within a year of each other.



controlled ship – but the reality was that the gameplay was devilishly complex to master. So while *Computer Space* was a groundbreaking, seismic event within the coin-op arcade industry, it was an equally thumping failure commercially. People just couldn't master the controls. Bushnell, disheartened by the game's lack of success (and by his small share of royalties from it), eventually parted ways with Nutting in mid-1972 and changed the name of his company to a Japanese word taken from the ancient game of *Go* - "Atari."

### ***Magnavox Odyssey***

What's most interesting about the arcade games is how quickly they migrated into the home. Actually, "migrated" is the wrong word – computerized games played on a television set were being developed concurrently even as the first *Spacewar!* console was set in that Stanford coffee shop. Magnavox released their Odyssey console for home use in 1972, a relatively short time after the first large console games made their appearance. Ralph Baer, the man who is known as the father of TV Games, sold the Odyssey concept to Magnavox at around the same time that "Galaxy Game" was being created out in California. Baer, a radio and television technician before and during World War II, was one of those people who was perfectly positioned to see the future of television, and he had the technical skills to make that vision come true. In Baer's words, "I simply came along and saw the millions of TV sets doing nothing but broadcasting whatever the local stations churned out, and soon a TV Game was born." [9] Beginning in 1966, Baer and a small band of colleagues at Sanders Associates, a New Hampshire electronics company, worked on what they called the "TV Game Project." But their primitive games were compelling, especially when the two "dots" representing the players were joined by a third dot, controlled by the hardware itself. Suddenly the possibilities expanded into sports games like, say, Ping-Pong, or football, or tennis.

By 1968, they had a working prototype they called the "Brown Box" that was attractive enough to shop around for manufacture and sale. Baer and his team faced an uphill battle, though, when it came to marketing their new, unprecedented system. An attempt to license the Brown Box, this time to the fledgling cable TV company TelePrompTer was cut short by a downturn in the cable industry in the late 60's. Finally, Magnavox gave the Brown Box the go-ahead for production, and in May, 1972 the Magnavox Odyssey was launched. Looking something like a small black and white boat with a black-topped plateau in the middle, the

Odyssey was all of 40 transistors and 40 diodes. It was a crude device, capable of displaying so few graphics that most games were sold with translucent plastic overlays that the player hung on the TV screen to fill in the missing details.<sup>2</sup> Perhaps the most notable thing about it was how the games were selected – via a slot and card system whose legacy can still be seen in today’s consoles and handhelds (though in this case the games were all contained within the unit, and the cards were the “key” that switched over to a specific game.) The Odyssey also came with two bulky, toaster-shaped game controller units, nearly as tall as the console itself and sprouting two dials on opposite sides that were used to control the action on-screen. Also included were six game cards that could be plugged into the small slot at the unit’s front, and literally hundreds of add-on accessories to be used with the games, such as the aforementioned plastic overlays (made of acetate, and shipped in duplicate to fit multiple TV screen sizes), cards, fake money, poker chips, maps, and score cards. [9] The Odyssey kit could not have been a better representative of its era – at a time when traditional games like cards and *Monopoly* were being challenged by the modern technology of television and enigmatic circuitry, the first electronic game still included the familiar Milton Bradley-esque plastic and cardboard bits, as if to make the consumer feel more comfortable that this unusual piece of equipment was indeed for entertainment. It was the epitome of a crossover product. Shortly after the system’s launch, the manufacturer (using a concept also originating in Baer’s shop) followed up with a kit containing a plastic rifle and six more games. The rifle was another element that carried forward into modern video game systems – it was a “light gun” capable of recognizing patterns on the screen, which enabled the developers to create the illusion that the player was “shooting” screen elements and making them behave in a different way, either disappearing or somehow moving or changing. Many years later, in the mid-80’s, the Nintendo Entertainment System would resurrect the light gun in a form very much like the Odyssey’s. Baer and his colleagues had formulated a strikingly far-reaching vision at a very early stage in computer gaming, and while today’s graphics capabilities make “TV Game Project” look as primitive as a bicycle next to a Ferrari, consoles like the PlayStation and the Xbox owe nearly all of their salient features to the Odyssey.

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<sup>2</sup> This was a crucial decision – the hardware had originally been able to generate the static graphic backgrounds itself, but in engineering it for production Magnavox decided to rip out that capability to reduce costs and include the acetate overlays instead. This set the stage for later consoles to appear more advanced than the Odyssey because they were able to display the backgrounds themselves – just as Baer’s design had been back in 1971.

About 200,000 Odyssey consoles were sold, not a lot by today's standards but enough to make it known that computer games played on TV sets was an industry with enormous potential. [9]

## **Atari and PONG**

In another of history's interesting twists, Nolan Bushnell took a great interest in the Magnavox Odyssey and went to see it for himself in mid-1972, right before he incorporated Atari. History does not record exactly what his impressions of the device were, but the fact that he soon left Nutting and formed his own company to create one of the most enduring video games in history could, perhaps, speak for itself. That game was *PONG*, which is now considered that granddaddy of all video games. From the instructions on the case – “Avoid missing ball for high score” – to the almost comically simple one knob interface, *PONG* was the embodiment of everything that *Computer Space* had taught Bushnell. Players lined up at the bar where the prototype was installed to get a chance at moving the small “paddle” up and down along the side of the screen, trying like crazy not to let the bouncing ball get past them. That first unit broke down in a matter of days from being overstuffed with quarters. The further irony was that amidst this success representatives from major coin-op businesses were turning up their noses at the opportunity to distribute *PONG* nationally. So Bushnell, who hadn't envisioned Atari as anything more than a development lab that handed games off to distributors – made the decision to manufacture *PONG* as well. He did, and they sold – all of them. Ultimately, *PONG* would sell around 8000 units, which was more than just a breakout success in the coin-op industry – it was a nuclear explosion. [9] *PONG* was all that the industry and society at large needed to see to know that electronic gaming was more than a transient phenomenon. It was November, 1972, and while the electronic gaming culture had begun nearly a decade before, it had finally reached the mainstream.

## **Arcade Games Explode**

Following the breakthrough success of *PONG*, a flood of imitators quickly came to the market. But while many of them successfully capitalized on the popularity of videogames, almost no one outside of Atari itself was attempting any innovation. Game themes tended to center around bouncing balls, chasing dots, or *Spacewar!* themes. Little true advancement was made aside from increased processor power, more color, and a greater selection of games on the

market. To a great extent, however, the lack of innovation was due to the lack of computing power that mid-70's equipment could muster – with pixilated graphics and limitations on the number of moving sprites onscreen simultaneously, there really aren't too many opportunities to create compelling onscreen experiences. The early arcade games were notable for simple, addictive fun, where skill was required but variety was scarce. Games that offered head-to-head competition between two players were the best bet, because nothing at that time provided more variability than player interaction. The chips available just lacked the power to synthesize the environments and events that would have enabled players to suspend their awareness of the games themselves. For all their novelty, videogames were hobbled by their primitive electronic underpinnings. But since the public didn't know what the games' true potential was, they were more or less happy playing *PONG* clones and racing "cars" around blocky, monochrome tracks. What looks desperately primitive today was state-of-the-art gaming nirvana back in 1974.

## **Adventure**

While most gamers may not have been aware that the games they were playing lacked the depth of a good movie or book, programmer and spelunker Will Crowther had a creative insight that was either perfectly obvious or genuinely brilliant – and probably a bit of both. He took his experiences exploring caves and turned them into a gaming experience based on the *Dungeons & Dragons* structure – imaginary scenes, described in words, requiring players to type in commands rather than twiddle a knob or joystick. In 1976, Crowther created his *Colossal Cave Adventure*, in which an entirely fabricated, text-based world unfolded in front of the player as he typed in commands like "go south" and "open door". A simple framework at first glance, but what it unlocked still reverberates today. Crowther's code was distributed in much the same way that *Spacewar!* was – across a network of terminal junkies just like him who had the privilege of sitting behind bigger iron than what powered the arcade consoles. Ultimately, the *Colossal Cave* code, which was originally in FORTRAN, was extended significantly by a Stanford programmer and renamed *Adventure*, the name it is best known by today. As a computer game it was almost unrecognizable by the standards of the day, but as an entertainment genre it was a perfectly logical extension of the D&D oeuvre. Imagination was a potent force, and it was put to good use by *Adventure* in an era when computer graphics were inadequate. It was most likely the first



intersection of computer gaming with a strong narrative, which considering its quality makes it an even more impressive achievement.

### ***More Consoles Emerge***

On the home gaming front, consoles had gotten off to a notable but mediocre start with the Magnavox Odyssey. Following on the heels of that unit were successive Odyssey revisions, a home version of *PONG* from Atari sold through Sears, and offerings by Coleco (several models called “Telstar”) and Fairchild Camera and Instrument (the “Channel F”). [9] Except for the Channel F, these were characterized by controls that were actually integrated into the console instead of being separate handheld units. Games were also housed within the units themselves, to be chosen by turning a dial on the outside. The Channel F deserves a place in history as the first console to offer games in ROM cartridges that were external to the box itself, as well as having highly versatile controllers that were external but permanently connected. [12] The Odyssey series became one of the first to offer 24 color games. Consoles became more and more successful, selling hundreds of thousands or even millions of units. But in hindsight, it was clear that the market was merely being primed for what would be another turning point for computer games – the Atari VCS.

In 1977, Atari was struggling under the weight of a sluggish economy and dragging console sales. They decided that they would follow up on their successful line of *PONG* consoles with a new offering, called the Atari Video Computer System. The VCS, later called the Atari 2600, was not a raging success when it was first introduced in 1977 – it needed the strength of a now-familiar paradigm, the flagship game title, to boost sales. In this case, that game was *Space Invaders*, which had been very popular in the arcades. The console, which was so popular that it is often referred to simply as “Atari,” began to sell like wildfire once *Space Invaders* was made available. It was a harmonic convergence of platform and content that would be repeated many times over in the next two decades. Atari recognized the wisdom of the arcade-to-console migration and followed on with VCS conversions of *Defender*, *Missile Command*, and *Asteroids*. When several Atari programmers split off to form their own game development company, called Activision, the economic impact of video games on the consumer market became that much more sophisticated, and the big business of video games began in earnest.

As if that weren't enough, a new wrinkle appeared in the gaming world – the emergence of home computers powerful enough to allow people to both play and program their own games, using the keyboard that was notably absent from home gaming consoles. The Apple II emerged in 1978, along with the Commodore PET and the Tandy TRS-80, and those who created home consoles sat up and took notice. Programmable gaming came to the console market with the release of the Bally Professional Arcade and the Magnavox Odyssey2 in 1978, with games saved on regular audio cassettes and distributed among users like bootlegged copies of Grateful Dead concerts. (Communities exist to this day that trade ROMs from late 70's, early 80's platforms, and it is the games that are the most popular software traded.) While computers were still not owned or understood by many households, those who knew them found that social activity like game trading and programming help was now part of the computing experience just as it had been for academic users since the 60's. For all the "practical" uses for home computers in the late 70's, gaming was still a major driving force for sales and popularity. It wouldn't be until the early 80's and the development of truly useful finance software that home computers would come to be seen as serious instruments and not just elaborate consoles for gaming.

### **PC Games**

For the next few years, against the background din of arcade games that were growing ever faster and more colorful, home computers were released by several companies, and games were some of the flagship software for many. Atari, in fact, released its own home computer platform in 1979 – the aptly named "Atari Home Computer" – to compete with the Apple II, Texas Instruments TI-99, and the Commodore PET. [9] Vector graphics began to make an appearance in late 1979, early 1980, lending their smooth, fluid lines to games like *Warrior* and *Battlezone*. Three-dimensional graphics suddenly seemed possible using vector-based systems, so much so that the Army commissioned a battlefield simulator to teach tank fighting to their troops. It is tempting to assign an ominous tone to the military's first interest in video games crossed with combat training, but in truth the Army brass were most likely being as practical as possible – why perform simple tactical training in expensive, dangerous, noisy tanks when you can accomplish almost the same task using computers in an enclosed, climate-controlled environment? This was almost certainly cheaper than the real thing, and far more efficient.

Another addition to the gaming possibilities came from a company called Nintendo, which emerged in 1980 with a new concept – the mini-game, which could be held in two hands and featured a black-and-white LCD screen with color overlays. [13] The games ranged from the standard (*Donkey Kong*, *Pinball*) to the silly (*Chef*, where the player must catch food in a frying pan thrown by various animals in the kitchen), and they were hopelessly addictive. Officially the games were called “Game & Watch,” since they also contained timekeeping hardware and software, but it’s hard to imagine anyone using them for telling time only. By 1989, the Game & Watch line had sold a combined 40 million units and beyond, and that was just the beginning of the handheld market. [9]

Throughout the 80’s games continued to be released in all four major areas – arcade, console, home computer, and handheld, with considerable overlap between platforms, especially for successful games like *Centipede*, *Defender*, and the most classic of them all, *Pac-Man*. The latter may be the best known video game ever invented, even though many people might have trouble explaining why it was, and is, so phenomenally successful. Perhaps it was the simplicity of the concept coupled with the surprising challenge the game offered – eat all the dots in a maze while being chased by cutely-named “ghosts” who kill you when they so much as touch you. Perhaps it was the ability of the protagonist, who resembled anything but a “man,” to turn the tables and go berserk on the monsters, chasing them down and “eating” them so that they were forced to start at the center of the maze again. Or very possibly it was the not-so-hidden secret of the game – that each of the ghosts had their own special pattern of moving through the maze in relation to *Pac-Man*’s location, which enabled the expert players to find exacting patterns through each maze level. It’s worth wondering what today’s artificial intelligence algorithms might do to destroy *Pac-Man*’s allure, since the ghosts would no longer be dumb pursuers but deadly search-and-destroy enemies with the uncanny ability to anticipate the player’s moves.

Significantly, the “sequel” to *Pac-Man* was one of the first games to openly acknowledge the industry’s difficulty in getting females interested in their products. *Ms. Pac-Man*, released in 1981, was a blatant attempt to “feminize” the popular maze game and draw the other fifty percent of the population into the electronic game craze, which was still overwhelmingly male. Whether the addition of lipstick and marriage themes to the game was successful as a draw for women is still up for debate, but *Ms. Pac-Man* itself was a gigantic success, probably because the gameplay improvements were both challenging and satisfying for all players, male or female.

We'll return to the gender discussion as it relates to computer games later, but suffice it to say that taking *Pac-Man* and slapping on lipstick and a bow is not one of the more sophisticated ways of attracting female gamers to the arcade.

With the additional power that came with improved integrated circuits and microprocessors, game designers and developers were granted ever-expanding powers to make games more colorful, give them more objects for the player to battle against, and create better-looking backgrounds for the games' supposed environments. Also expanding were the perspectives gamers were given – the “top-down” view favored by everything from *PONG* to *Pac-Man* was joined by “side-scrolling” action that created the illusion that an entire horizontal world existed beyond the right edge of the screen, to be discovered when the player successfully blasted his way past the bad guys and forced the background to move left. Three-dimensional games like *Tempest*, where the player sat at the end of a long tube from which threatening objects hurtled directly into the player's face, favored the “first-person” perspective where the “camera” represented the player's eyes, in this case implicitly. One of the more innovative perspectives was the “isometric” view, which put the player's viewpoint somewhere above, behind, and to the right of the protagonist's vehicle – *Zaxxon* (1982) is perhaps the most famous example of this, and one of the first games to use it, where a space-shuttle-like ship flies through uneven terrain and through three-dimensional objects while shooting oncoming enemies and ground-based turrets. Isometric views necessarily required a bit more processing power due to the more sophisticated shading objects needed to look three-dimensional, but the illusion was remarkably well done considering the limitations of the early-80's processors.

### ***Laser Disc Games***

Even though there was a dangerous glut of game companies filling the industry with unspeakably bad games by 1983, some innovations were still seen, especially in the arcade where the companies had the space and budget to include state of the art hardware. A quantum leap in display quality came when someone had the bright idea to release a game based on a new media format, the Laserdisc. The first Laserdisc game released was *Dragon's Lair*, which became an instant classic as a cartoon-cum-videogame that was more of a choose-your-own-adventure than a true video game. Still, arcade crowds were magnetically drawn to the interactive action and compelling graphic sequences, and the distributors played to this by



including a second monitor on top of the cabinet for third-party viewing [9]. There is no doubt that *Dragon's Lair* uncovered the insatiable desire of gamers for more – more graphics power, more storyline, more visually stunning material flashing across the screen. Unfortunately, the resolution of a Laserdisc was far, far ahead of the graphics processors of the day, so those desires would go only partially fulfilled until, well, about right now. More about that in a minute...

## Chapter 2 - 1984-Present: Crash and Revival

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The year 1984 proved to be a dystopia of sorts for the video game industry. The glut of fly-by-night videogame companies proved too much for the market, and the industry's overall revenue had dropped 30% to \$2 billion. In many ways this is a surprising statement, since \$2 billion is a respectable figure for any "fledgling" industry – perhaps the very trendiness of videogames contributed to this "correction"; perhaps the quality of the technology and/or the development talent at that time wasn't sufficient to continue the astounding growth and popularity of new games. Whatever the case, the industry collapsed under its own weight for a moment, but it would soon revive and reemerge as a different, more risk-averse animal.

In the meantime, the home computing world received a major boost with the release of the Apple Macintosh, also in 1984. Though there were relatively few games available for the Mac in the early days, most notable *Dark Castle*, the platform still served as a wake-up call for the game industry that PCs were viable competitors to consoles in bringing games into the home. While the PC hardware would struggle (and continue to struggle) to keep up with the graphical power and ease of use that consoles enjoyed, they were undeniably the third genotype in a heretofore two-branched family tree – arcade games and consoles.

### **Consoles Reemerge**

It was into this uncertain world that Nintendo first thought of introducing their wildly successful Famicom console, first released in Japan in 1983, to the U.S. market. In 1985 Nintendo approached Atari with an offer to distribute the Famicom domestically, but Atari had been hit especially hard by the industry crash and was at that point in exactly the wrong place financially to consider taking on such a risky venture. The Atari 7800 ProSystem, a next-generation console the company was hoping would lift their sagging fortunes, was the focus of all their efforts, and unbeknownst to them was also the final nail in their console coffin. [9]

Nintendo instead went ahead on their own with the U.S. version of the Famicom, which was renamed the Nintendo Entertainment System and launched on a limited basis in 1985. [14]

In 1986 the console was made available nationwide, and the response was overwhelming. The American public took to the NES and its stable of games, including the much-beloved Mario character Nintendo had cultivated from *Donkey Kong* onward. In fact, it was probably the quality of the games that most contributed to the NES's success – Nintendo held their developers on an extraordinarily tight leash with a set of stringent game quality requirements that had to be met before a game could be released for the console. While developers chafed under the strict guidelines, the result was a collection of satisfying and addictive games that elevated them above the notoriously lax standards that led to the industry crash in the first place. With a combination of cheap, compelling hardware and painstakingly crafted games, Nintendo had found a strategy that enabled them to compete successfully in the depressed and pessimistic video game market.

Sega, another Japanese electronics maker, had its own 8-bit system on the American market, but the popularity of the Sega Master System was hobbled by inferior U.S. marketing and the stranglehold Nintendo had on game development houses, which in many cases had to sign exclusive contracts with Nintendo that barred them from developing for any other console. While the SMS was much more successful in Mexico and the UK, and is still widely regarded as having been technically and aesthetically superior, its American performance was decidedly lackluster next to the NES. The console market had become an economic battlefield where ruthlessness was a required quality for success, and Nintendo was a specialist in that arena. Still, Sega didn't give up hope, and in 1989 released the Sega Genesis. While it came 6 months after NEC's TurboGrafx, the 16-bit Genesis boasted a stronger, better-looking catalog of games that quickly propelled it to number one. [14] In another example of arcade-to-console crossover, *Altered Beast* shipped with every Genesis. Sega even managed a few years later to produce a popular add-on CD-ROM unit, the SegaCD, that remains one of the few console drive add-ons to achieve commercial success.

Nintendo was caught off guard by the success of the Genesis. Based on the huge success of the NES, the company had not seriously considered producing a 16-bit console. Since they maintained a strong lock on the best game developers in both Japan and the United States, Nintendo mistakenly assumed that their hegemony was unassailable. In fact, they regarded the historically hapless NEC and their TurboGrafx-16 line as more of a threat than Sega. As a result, they were caught flatfooted, and took two years to produce the Super NES, a 16-bit system, in response to the Genesis, which had already sold more than one million consoles by that time.

Amazingly, despite Sega's head start, many still expected the SNES to dominate the console market. (This has emerged as a common and somewhat baffling theme in the analysis video game industry – many seem to expect one player to dominate and all others to fall away, a phenomenon that is not so taken for granted in other industries.) But the SNES had an Achilles heel – despite the two-year advantage in technology, it was still slower in terms of actual processing power than the Genesis. Sega emphasized and exploited this speed advantage by introducing a “fast” mascot, *Sonic the Hedgehog*. Sonic was to Sega what Mario was to Nintendo, and while the SNES managed to claw its way to equal market footing with the Genesis, the battle devolved into a standoff in which both companies reluctantly (but still profitably) shared the console market.

The NES, its competitors, and successors all heralded a significant shift away from the arcade and into the home. While consoles had been developing in parallel and sharing games with the arcades since the early 80's, this particular generation of consoles began giving consumers a compelling reason to play games at home for good. Spend a few hundred bucks once, the message seemed, and receive hours of quality gaming alone or with friends within arms reach of the refrigerator (and a button-push away from the taking a break with a spot of television). Without spending a bagful of quarters, any kid could become an expert at *Altered Beast* or *Tetris*, which at least among school-age boys was a major form of social currency. It was the beginning of a shift that is still happening, more than a decade later (although these days school-age girls factor into the gaming scene quite a bit more!). *The Legend of Zelda* for NES, designed by legendary Nintendo game designer Shigeru Miyamoto, broke new ground as a sweeping, complex adventure game that took many hours to complete and saved the player's progress inside the cartridge itself.

### Handheld Games

In 1989, what could be considered an offshoot of the console market made a resurgence – the handheld video game. Though these had never really gone away, Nintendo took them to the next level (post-Game & Watch era) with the introduction of the Nintendo GameBoy. Like the NES, the GameBoy was not much to look at, just a small gray rectangle with a black and white LCD screen and the familiar analog direction pad and two-button controls. Again, Nintendo relied upon their games to carry the day, and a Russian-designed game called *Tetris* led the charge by addicting millions with its falling block and “fitting” concept. (Many of players to this



day, yours truly included, can recall emerging from long sessions of *Tetris* and being unable to stop mentally “fitting” objects together in our visual field. In case you were curious, raindrops trickling down a windowpane can in a pinch function as a sort of poor man’s *Tetris*.) Nintendo wasn’t alone in the handheld market – TurboGrafx had a similar offering – but by surfing on the success of the NES and games derived from it they were able to overwhelm the world of handhelds and grab the top spot. (They still hold that title to this day, two generations of handhelds later, with the GameBoy Advance.) The GameBoy also allowed players to link up through a special cable and play games competitively – *Tetris* had a “versus” mode that allowed you to make lines appear on your opponents screen every time you yourself completed two or more lines on your own unit.

The handheld market is an interesting one. It is tempting to connect it directly to the consoles, but in reality one realizes that handhelds offer a freedom and certain capabilities that consoles find difficult or impossible to match. They can go places that consoles, with their power-cord tether, cannot. I have strong memories of playing *Tetris* on a GameBoy against my friends, somewhere over the Pacific ocean, aboard a 747 full of high-schoolers bound for Australia. What console could compete with a scenario like that? Our games were even a spectator sport, with other friends crowding around to get a glimpse of the actions and reactions as we relentlessly passed extra rows over to our opponent. Though I had no concept of it at the time, this was taking computer games into places and situations that the developers of *Spacewar!* could not have imagined.

A brutal example of the cutthroat economics of the early-90’s console scene can be found in the Panasonic 3DO. Begun in 1992, the 3DO project was an attempt to create one of the most technologically advanced consoles ever, and indeed the designers may have succeeded. The console, released in 1993, cost about \$700, which is more or less all that needs to be known about that story. It was a fatal price point, and a mistake that future console developers internalized. Today the business model for all video game consoles is to sell the actual console at a loss, sometimes a significant one, and make all the profits on the games and accessories.

While Nintendo and Sega became embroiled in their punch-counterpunch console battles, an electronics industry behemoth was steering its formidable resources toward the market. In 1995, Sony released their PlayStation, which took only two years to rocket to the number one console in the world and served notice that the videogame industry was no longer a place for

amateurs or second-rate players. [15] Sony was a world-class operation that had made a crucial strategic decision – to base its console games on CD-ROM media rather than the standard, solid-state cartridge approach. [15] Suddenly, manufacturing lead times for popular games were cut from months to days, and trends that had before been almost impossible to anticipate and meet with ready product were now the perfect opportunities to crank out more copies of a game in short order and meet demand. Sony also took advantage of a seriously disorganized Sega organization – at one point both Sega of Japan and Sega of America were developing new console platforms, and more than once next-generation console efforts were scrapped and restarted. Although Nintendo 64 offering was a strong contender against the PlayStation from 1995-1997, the entrance of Sony into the console market was another harsh lesson for Nintendo, which still clung to the notion that they were the superior console gaming company. Sega's 32-bit offering, the Saturn, also went head-to-head against the PlayStation and lost, retreating quietly into the annals of gaming history.

An interesting and relatively recent development was the appearance of a new type of handheld game – the virtual pet. In 1997, Bandai barely avoided a merger with Sega and turned around to release *Tamagotchi*, a mini-handheld game that allowed the player to create, nurture, and educate a small electronic “animal” [14] Though they were much smaller than a GameBoy, roughly the size of a large key chain with just a tiny monochrome LCD screens and a few buttons for an interface, *Tamagotchi*'s created a thundering sensation in both Japan and America, prompting schools to ban them and parents to dread being given custody of them. Caring for a *Tamagotchi* was a serious business to many children – too little attention, food, or cleaning and the little critters could “die” a tragic death, causing real emotional upset. As a cultural phenomenon the craze is worth mentioning. Whether or not it is actually a game is something that could be questioned as well – in any event, the popularity of virtual pets, even extremely basic ones like the *Tamagotchi*, means that we almost certainly are still in the foothills of this genre.

### ***Current Console Wars***

From a purely market-centric perspective, today's gaming scene is split among several different platforms. Consoles, which garner the most media attention, attract a good deal of the money as well. The console market, at this writing, is split remarkably evenly between three

major players: Sony's PlayStation 2, Nintendo's GameCube, and Microsoft's Xbox. The latter is the most recent entrant. Microsoft decided that they had built a good developer base for games on their dominant Windows OS platform for the PC. It's the first real example of PC technology crossing over to consoles and not the other way around – Microsoft successfully persuaded a number of top game development houses to leverage their experience with DirectX, a popular Windows technology that enables relatively easy game development, and apply it to games that would run on the Xbox (which runs core software based on the Windows 2000 kernel). [16]

It was Sony, however, that got the jump in this race by releasing the PlayStation 2 in the second half of 2000, in time for the holiday rush. By the time the 2001 holiday season came around, Nintendo and Microsoft were ready with their consoles, but the PS2 had a considerable head start, not to mention a healthy catalog of game titles that the other two companies could not match. But the Xbox and GameCube have rallied, with the edge going to Microsoft, and this story is just beginning. The next chapter will involve hooking both up the PS2 and the Xbox to broadband connections and allowing gamers to play online against opponents around the world. Both companies plan to enable this sometime around mid-2002, and it's a fair guess that when games are released that support multiplayer online play the console market will steal a little more ground from the PC game sales, since this is a capability that traditionally has been limited to PC's. [17]

One unfortunate footnote in the console wars is Sega. In late 1999 the company finally pulled things together enough to release the DreamCast, a 128-bit platform with a promising future but a steep development learning curve. As a result, few games were produced for it, and once the PS2 was released a year later it became clear that the DreamCast was underpowered and not destined for greatness. But Sega refused to give up, even announcing an online service called Seganet and later a broadband modem add-on, both firsts for any console. But after watching their console fortunes fade for years, Sega finally gave up the ghost in early 2001 and stopped manufacturing the DreamCast altogether. [14] No one was really surprised, but the cancellation still sent a tremor through the industry. Sega, however, was wisely restructuring itself as a game developer for the competing consoles, and games like *Virtua Fighter 4* from the Sega studios are still stirring up great anticipation.

## Multiple PC Platforms

Meantime, in the wings, desktop PCs are still trying to compete for gamers' eyes and dollars. A good deal, but not all, console games also exist for the PC, generally for Windows. Macintosh has traditionally held a much smaller fraction of the gaming community, although this is changing with the release of OS X and the porting of many popular games over to Apple's perennial underdog platform. [18] Linux, a popular but esoteric operating system distributed for free along with its source code, even has several games that have been converted to run on it. The game industry, on the whole, is still committed to supporting the personal computer as a gaming platform – after all, PC owners' money is the same as console owners', and as we'll see in Chapter 3, profits are hard to come by in this industry.

There have been a few important games that were released for the PC before they existed for the arcade or consoles. *Doom* is one of those games. Released by id Software in 1993, *Doom* became the iconic 3D first-person shooter game, and to date has sold over 15 million copies worldwide. [19] *Doom* has since gone on to be ported to several other platforms, including the Nintendo 64, PlayStation 2, and the latest handheld from Nintendo, the GameBoy Advance. The wizards at id went on to create other benchmark games such as the *Quake* series, and at this writing is hard at work on *Doom III*, where they are once again rewriting the game's "engine" in search of better visual realism, faster game speed, and improved in-game physics. Of course, gamers who want *Doom III* will also need to upgrade their desktop PCs to the newest, fastest graphic accelerator cards on the market, an important phenomenon that contributes in no small part to the sale of high-end, powerful desktop machines and graphics chips. Two of the largest graphic accelerator development companies, ATI and Nvidia, have recently crossed over into the console world in significant volume by lending their technology to the graphics underpinnings of the GameCube and Xbox, respectively. This is yet another example of crossover, this time in hardware, between two branches of the computer gaming family tree.

All is not on the upswing in the world of video games, however. In recent years arcades have seen revenues fall steadily as the number of customers declined, and major arcade game manufacturers such as Midway have elected to stop making arcade games altogether and focus on other areas, such as console games. [20] The blame for the decline is usually placed on the exploding console market, which has essentially duplicated the arcade experience in the home and in many cases made it even better. Arcades, the theory goes, have lost their demographic



(teenage boys) and their technological edge. The economics of spending twenty dollars for a temporary gaming experience versus spending forty dollars on a game one can play forever dictate that gamers, especially those teenage boys with limited cash resources, are going to make the console choice.

Exits by industry giants like Midway have been the cause for much hand-wringing among analysts, but others are attempting to reverse the trend by addressing the competition head-on. Sega GameWorks, L.L.C., in cooperation with Steven Spielberg, is a company with several locations that include the traditional arcade experience, but go beyond it to offer a restaurant and party rooms for families and other group outings. [21] This may not sound very exotic, but the games themselves are both proprietary and outsized in a way that consoles cannot yet compete with. Games like *Sky Pirates VR* and *Mr. Bigg VR* make use of “Vertical Reality” to propel players physically up and down along multistory towers, and *Max Flight VR2002 Roller Coaster* is a “virtual roller coaster” that places customers in a pod capable of moving 360 degrees according to preset coaster attributes chosen by the players themselves. The very thing that parents of pizza-gorged children might not appreciate is what GameWorks is counting on to drive revenue – the amusement park ride-like thrill combined with a standard video game. Not that all of this comes cheap – the fact that a company like Sega must join forces with a name like Spielberg’s to create a business model for a new wave of “total entertainment experience” locations is an indication that deep pockets are required to be successful. It is also a clear sign that the arcade landscape is changing, and may permanently settle in a zone closer to today’s theme parks than to the dark, smoky, slightly menacing arcades of the 70’s and 80’s. Apparently Atari was actually on the right track with their “Pizza Time Theatre” restaurants back in 1977, which had animatronic robots for entertainment! [22]

Today’s games and platforms are undeniably more technologically advanced than ever before, and there have been no indications that this trend will do anything but continue. Yet the profound shift away from arcades and toward console and, to a lesser extent, PC gaming means that games have shifted away from the public spaces and more into the privacy of the family home. Such a trend makes game companies salivate at all the product tie-in opportunities, but it also makes it significantly more difficult to ascertain just how games are being played and by whom. The next chapter will examine the demographics of computer games, and show how they

are intimately involved in our culture and everyday life, but in a more subtle way than the popular media's portrayal would lead us to believe.

## Chapter 3 - The Societal Impact of Computer Games

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### ***Demographics***

In their primordial days, computer games were seen quite accurately as the domain of hardcore computer geeks who either had access to super-powerful lab computers or had some sort of expertise with state-of-the-art video circuits. Back in the 60's and 70's, those people tended to be male, and the games they designed contained, not surprisingly, traditionally male themes like combat, adventure, and team sports. In the year 2002, none of those themes are seen as male domains anymore – women fight in the armed forces, travel to the far reaches of the earth and space for research and exploration, and, thanks to Title IX, play team sports on a national and international level, often having even more success than their male counterparts at winning tournaments. Still, a surprising bias seems to exist in the social consciousness that teenage boys are the predominant computer gamers. Newspaper stories, game advertisements, movies, and even the games themselves reflect this assumption.

There is ample evidence to contradict this stereotype. The Interactive Digital Software Association, a group that monitors computer gaming activity, has found that forty-three percent of all game players are women, and that the average age of the player is twenty-eight – twenty-nine for women players only. [23] Of those who play computer games, 42% of them are over the age of 35, while 42% of console gamers are under 18. Clearly there is a distinct age difference between the PC gamer and the console player. Playing games can be a family activity, too – about half the time games are played multiple members of the family participate. Apparently siblings, parents, or spouses often use computer games as group activities. My wife and I have played *The Sims* many times together, with one person at the helm “driving” the sim-people and the other offering suggestions from the passenger seat. It's a fun way to be home and be actively involved in something together, rather than sitting back and passively flipping through television channels or each reading a book in separate corners of the room.

Speaking of television, games are also creeping up on its decades-old hegemony in the home. In a survey of 1600 households by the IDSA, 35.5% of respondents said that Playing computer or console games was the most fun entertainment activity [23]. Television was second with 18.2% of the vote, but right behind it as a fun pastime with 15.3% was surfing the Internet! Without a doubt the computer is pulling even with television as the primary household diversion, much like television did to radio in the middle of last century. It seems ironic after so many years of industry analysts preaching the coming of a “convergence” between television, computers, and the internet, that the initial form of the transformation would appear to be leaving television out of the mix altogether. Instead, computers connected to the Internet running online games are emerging as the premiere interactive multimedia experience – no doubt much to the chagrin of cable executives everywhere who were hoping to cash in. Truth be told, the final chapter on convergence isn’t even close to being written yet – there’s still a fair chance that television could somehow assert (and insert) itself into the equation through the use of set-top boxes like the TiVo, WebTV, or specially equipped cable boxes themselves. Some digital cable boxes have several tantalizing ports in the back labeled for USB and possibly even network connectivity. Coupled with the new digital television recorders and other digital television technology, the potential for new and exciting features is huge.

### ***Economics***

If the demographics of modern game players are exciting, the economics are heart-pounding. According to the Interactive Digital Software Association, game sales in 2001 were up 7.9% to \$6.35 billion, an increase fueled entirely by the sale of console games. [24] Just over 225 million individual games were sold, up 4.5% from 2000. To put that in perspective, the IDSA reports that the number of games sold was “almost 11 times the number of tickets sold to NBA and NHL games for the last completed season, and about 14 times the number of NFL tickets sold in the 2000 season.” Keep in mind that we’re talking about the U.S. market only – the international numbers can only be higher. While the direct comparison to the sports leagues’ ticket sales may not be a perfect analogy, it’s clear from this survey that computer games have strongly asserted themselves as a preferred method of entertainment in this country.

In addition to the sales figures, the computer game industry itself is a significant generator of employment and income for tens of thousands of people. In 2000, the estimated



direct and indirect employment resulting from the production, transportation, and sale of computer games was nearly 220,000 people, who collectively earned \$7.2 billion [25]. All the figures point to a very optimistic picture of the computer and console game industry, one that the IDSA continues to support with monthly press releases and studies.

Not everyone agrees with this rosy assessment, however, which is perhaps a sign of the computer game industry's transition into maturity. Getting PC games in particular published and onto shelves has turned into an extremely low-margin affair, with development houses often spending hundreds of thousands of dollars just to get top-tier games like *Quake III: Arena* and *Diablo* on retail shelves [26]. In fact, while it takes relatively few people to develop and sell even the flashiest titles, the costs to get them published, boxed, and advertised are so prohibitive that only the top few development houses manage to make significant profits from their titles. News of best-selling games like *The Sims* may trumpet sales over a million units, but in reality titles are lucky to sell 25,000 copies, much less the 50,000-100,000 necessary for serious profits [26]. What game developers and publishers know is that it costs a good deal of money to get advertising and placement in catalogs, and even more to obtain retail shelf space at a store like CompUSA or Best Buy. These costs can easily outweigh the costs of developing the games in the first place. So developers play it conservatively, much like the movie industry – original, top-quality titles are rare and only turned out by the biggest companies (id, Blizzard, Maxis, etc.). Successful titles are followed up by a slew of sequels and add-ons, which represent much more assured profits than new, untested concepts. Still, games for the personal computer are not a huge profit generator for anyone – the market remains too narrow, and the costs of development too steep.

The real growth area for games is in the console market. The console sales are expected to top \$30 billion in 2002, with nearly all of that profit coming from game sales and not from hardware [27]. Many critics are saying that this shift in profits away from PC games and toward consoles, in combination with the tendency of the hardware to converge into common components, spells the beginning of the end for PC games. If this is true, we should expect to see many developers dropping PC versions of their games and releasing them exclusively for one or more of the consoles on the market. In a way, this has already begun to happen. The sale of the game development company Bungie to industry juggernaut Microsoft came as a shock to dismayed gamers, who felt that the company had sold out, but in reality the company was



suffering from disappointing sales that threatened their revenue and, by extension, their survival as an independent developer. By becoming a “studio” within the Microsoft empire, Bungie assured themselves of a stable source of income and a guaranteed distribution network (via Microsoft’s highly anticipated Xbox platform). Bungie’s latest game, a Quake-like shooter with multiplayer capabilities called *Halo*, was indeed released as one of the flagship Xbox games and has sold remarkably well.

“Seismic” shifts like Bungie switching to console releases have caused some concern. Gamers who grew up on Bungie’s classic PC titles like *Marathon* and *Myth* fear that by developing for the Xbox, the company will not go back and convert the finished console games to run on the PC. If such a decision were made, the analysts would surely be writing the eulogy for PC gaming. Bungie, however, has proved these fears groundless by publicly proclaiming their intentions to release *Halo* for both Windows and Mac. It would appear that no one is giving up on PC game development altogether – yet.

Still, it’s not hard to see that the industry, and the game-playing public, is throwing its weight behind the console invasion. The progression is logical. First came arcade games, which were a public affair that people could play while being watched by friends or passers by. Arcades allowed the players access to the latest video game technology and a chance to show off their skills or challenge others at the same time. Second, the consoles were infiltrating the home on a parallel track, inserting games into a private space where players could hone their skills, first on very simple games and later on conversions of the popular arcade titles like *Donkey Kong* and *Pac-Man*. Consoles made television, a primary entertainment center of the home, into a more engaging and immersive experience, and you only had to pay once instead of doling out quarters every few minutes.

Third, personal computers offered a more tactile and private gaming experience – players got to insert disks, type commands, and use the numerous keyboard keys to control the on-screen action. PCs, much like today, were never as easy a game experience - one had to work more to get the games loaded and running – but for the subset of gamers who enjoyed that kind of fiddling, they were even more satisfying. In addition, the home computer is more often found in a private space within the house, such as an office or study, rather than in the family room like the television, which contributed to the perception of the gamer as isolated. It must have been what people wanted, because arcade games have been in a steady decline for years, and major

manufacturers like Acclaim and Midway have left the market in order to concentrate on console games [20, 28].

Online gaming is quickly changing the home gamer's isolation. Now the PC gamer with an Internet connection can easily join games of ten or 1000 players at any time of day. Online gaming has permanently and radically changed the face of computer entertainment. Significantly, online gaming is something that consoles still cannot do, and even so console game sales for the consoles are still outstripping the PC. This won't be the case for long. Both Sony's PlayStation 2 and Microsoft's Xbox have announced plans to roll out their online gaming services by the end of 2002 [29]. If done right, players connecting through these consoles will enjoy a much easier and more trouble-free gaming experience than typically encountered by PC gamers. Consoles might be the distillation of everything the computer gamer truly wants – simplicity, choice, and (soon) online action. The arcade games were the first to falter – will the PC games be the next to go?

The economic impact of a new entertainment medium may not be the only measure of its success, but it is certainly a significant component. Judging from the economic indicators of computer and video games, they are clearly making their mark on the nation's pocketbook, and by extension the world's. When a large number of people say that they prefer it to television for their home entertainment, it is impossible to dismiss computer games as a passing fad. We should instead make it our responsibility to examine this phenomenon more closely. What's really going on to make computer games this successful this quickly? Why are so many people drawn to the experience of racing virtual cars, or controlling virtual fighting humanoids, or exploring completely imaginary online realms? For such a pervasive and lucrative industry, it is almost surprising that these questions haven't been answered already.

The first question we should return to is one of gender – as mentioned earlier the formative years of the gaming industry were largely fed by young boys who were themselves in their formative years. Why were so many males involved with early computer games? They programmed them, played them, and wrote about them, and women were largely excluded, whether by choice or by design. Those graduate students hunched over their terminals playing *Adventure* were simply looking for a diversion – in short, they were the prototypical “geeks” who seemed to prefer spending time writing FORTRAN to socializing outside of the lab. Games created in this kind of place tended to represent what these students were interested in –

complex, medieval concepts like dungeons and trolls and sword-fighting. Women just weren't interested in all the fighting and puzzle-solving.

This trend continued on at least through the 80's, with males making up the vast majority of the audience for all new titles and publications pertaining to games. What, exactly, was not appealing to females about these games? For one, they often involved a good deal of violence. For another, the depiction of females within the games themselves was not always favorable – women or girl characters were typically the ones to be saved, or the ones depicted on the boxes as helpless and weak. [30] Within the game, 50% of female characters appeared as props or bystanders, rather than competitors as many of the male characters were [31]. .

The male-biased themes went beyond just the packaging and the characters, however. Some very fundamental, mythical storylines ran through a surprising number of games, including staples like Nintendo's *Super Mario Bros.* for the NES. As the literary critic Northrop Frye explains:

“Mythologies are full of young gods or heroes who go through various successful adventures and then are deserted or betrayed and killed, and then come back to life again, suggesting in their story the movement of the sun across the sky into the dark or the progression of seasons through winter and spring. Sometimes they're swallowed by a huge sea monster or killed by a boar; or they wander in a strange dark underworld and then fight their way out again...Usually there's a female figure in the story.” [32]

This general story outline is also referred to as the “monomyth,” which is also found in “epics such as Gilgamesh, the Illiad and the Odyssey, Beowulf, Chanson de Roland; biblical tales including ones about Moses, Elijah, and Jesus; and ancient Greek and Roman myths about Jason, Zeus, Agamemnon, Oedipus and a host of others.” [33] In the game *Super Mario Bros.*, the brothers Mario and Luigi are on a journey to save Princess Toadstool from the custody of the evil “Koopa,” who commands an army of malevolent dinosaur-like creatures that live both above and below ground. In the game, the player takes the form of either Mario or Luigi, and play progresses through a land filled with mushrooms and underground dungeons, all of which contain enemy dinosaurs bent on “killing” Mario/Luigi. Frye's “strange dark underworld” is adequately represented by the underground areas found on nearly every level of the game, and in *Super Mario Bros. 2* there is even an ice world that corresponds to the changing of seasons Frye also mentions. The most obvious recreation of the monomyth in games is probably the death-

rebirth scenario, which is repeated constantly as the players “die” through clumsiness or failure to avoid the bad guys, only to be “resurrected” almost immediately to pick up about where they left off. (This also causes concern with those who oppose violence without consequences in video games – see page 44 for more about this.) The perpetuation of this popular story is not a sin in itself for the game designers – they cannot be faulted for capitalizing on what has historically been a wildly successful script. What they *can* be taken to task for is not giving the female a more prominent role anywhere in the games’ production, or really trying in any significant way to tailor their games to a more unisex audience. Since it is the men and boys of the family who traditionally buy computer and video games, this marketing and packaging bias makes sense on one level. [30] But from a standpoint of increasing their potential audience, the developers seem to be giving up on the half that is female altogether. According to Chaika, the titles were generally thought might appeal to girls were not, strictly speaking, computer games at all – they were “edutainment” software designed to teach while still being fun. It seems to be some version of the clear dichotomy one can see in any toy store today – boys’ toys are in one area, usually packaged in blue or green or purple, while girls’ toys occupy their own aisles, with distinctive pinks, purples, and teals on their boxes. The people creating both video games *and* toys must have been subscribing to that same philosophy – what boys like, girls don’t. Those games that happened to appeal to girls did so almost purely by accident, not by any strategy devised by the development or packaging teams.

In the mid-90’s there was an upsurge in the popularity of “girl game” companies, which set out to analyze what girls wanted in their game software. Their first attempts weren’t very sophisticated – they simply replaced male protagonists with female ones and took out the violence. The games were marketed them in the same purple-and-pink boxes, just like “Barbie”, and put them on the shelves at the computer stores. Not surprisingly, “software designed for girls has not caught the fancy of girls, and the crowds in the video game aisle of toy stores and in arcades are mostly boys.” [30] Clearly just tinkering with the superficial aspects of the standard game design wasn’t enough to spur sales, and although they announced their intentions as noble, the companies weren’t necessarily releasing quality games – a necessity for anyone to take interest, male or female. As game designer Ernest Adams said,

“What I object to is the hypocrisy of claiming you are doing something especially good for girls and then turning out schlock stereotype games. But it is irritating to



see people getting a lot of press, claiming they are doing something wonderful and new for girls and then turning out schlock for them that is no better for them than the material that is already out there.” [34]

Perhaps the most can be learned about what girls (and women) want in games simply from listening to them. Brenda Laurel, of the now-defunct girl-game company Purple Moon, says,

“For example, [girls ] hate to die and start over. That is, like, way stupid and intolerable. They are not interested in climbing a real steep learning curve just to be able to say they’ve achieved mastery of something. Mastery for its own sake is not very good social currency for a girl. They demand an experiential path, and something has to happen right away...Another kind of surprising thing is that girls will play games together whether or not the games are designed for multiple players.” [35]

There is a lot to unpack in that statement. One of the central tenets of video games since the invention of *SpaceWar!* has been that death is an acceptable outcome, provided the player can come back to try again, theoretically slightly more skillfully than the last time. Now, according to Ms. Laurel, we learn that girls don’t like this repetitive dying – apparently learning has to take some other forms, new methods of the “setback” that aren’t catastrophic but bad enough to get the message across. Another revealing comment is that girls don’t value the “mastery” of any game as much as the boys do –it’s simply not “social currency” for them the way it is for their male counterparts. Girls apparently need more complex rewards both from the games and from their peers. Cassell and Jenkins say “we see that the girls preferred to create characters playing realistic roles, with playing ‘oneself’ possibly the most realistic of all.” [35]



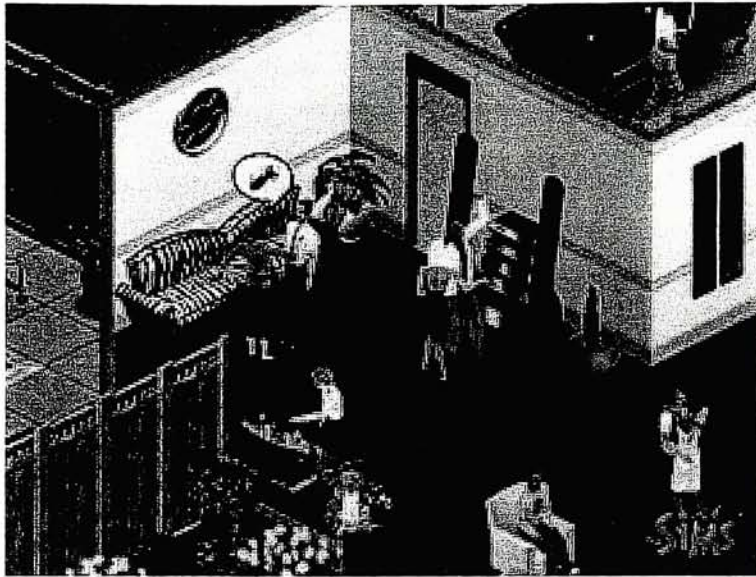


Figure 1: *The Sims*, courtesy TheSims.EA.com

One of the most successful games to date at drawing female players is *The Sims*, which allows players to create “human” characters and dictate their lives, families, houses, and surroundings with an unprecedented degree of realism (see Figure 1, above). The game has been likened by many as “playing dolls on the computer,” (in fact, the game’s working title was “Sim Dollhouse”) [36] which is an apt description even if it falls short of conveying the entire gameplay experience. The game allows the player to set the stage for these virtual people to lead virtual lives. It begins with the character creation, which includes naming your “sim”, choosing their default clothing, and writing a short bio describing their imaginary life. Then you move to choosing a plot of land in the sim-neighborhood, where you use your initial budget of \$20,000 to build a house and fill it with furniture and appliances. Once all of the set-up has been completed, your sim comes to life and begins to exist in their customized environment. They can cook, clean, read books to learn new skills, call their neighbors, and entertain themselves in any number of ways, including watching television and, in one of the game’s trademark “meta” touches, playing with a tiny dollhouse. (It is fitting that even the adults have a grand time playing with the dollhouse.) Most importantly, however, sims can have relatively complex relationships with other sims – they can make friends, have extended conversations, dance to music, relax in the hot tub, and give each other back rubs. Players can steer their sims into these interactions in order to build up “relationship points.” The accumulation of enough positive points brings with it more possible interactions, including getting married. The complexity of the game’s relationship

code alone is too much to detail completely, but suffice it to say that a sim-neighborhood can become a densely tangled web of love, jealousy, and friendship.

It is easy to see how the creation of a sim with similar characteristics to oneself could be the springboard to all sorts of fantasy relationships. In addition, the game allows players to share their accomplishments and creations with others – they can upload structures they’ve built or families they’ve created, or just share “photo albums” of their family events that happen within the game. Despite the fact that *The Sims* is not (yet) an online game, which means that all games are still isolated to the one computer they’re running on, Maxis has managed to extend the game beyond those programmatic limitations by turning the families and houses into commodities. Even further beyond that, the company has released add-on packs that create whole new areas to build in, explore, form relationships, and go on family vacations. The philosophy of *The Sims*, like many of the Maxis games, is not to win or lose, but to achieve and be rewarded for those achievements in a way that is satisfying. If a human player creates a warm and loving relationship between two sim-people, they are rewarded by a proposal of marriage from one sim to another. If they throw an especially good party at their house, they are rewarded with a “celebrity” who drops by to enjoy the party’s vibe. The game itself never ends – you can play as long as you like, and achieve as much or as little as you like. The add-on packs make economic sense, to keep people playing the game and keep the community interest high, but the game’s own design makes tremendous marketing sense, because it plays to common desires that everyone has, men and women. Just about everyone is familiar with the problems surrounding building relationships, managing our time every day, finding a job, raising children, so to find them so humorously represented in a virtual environment which rewards you for “success” in these endeavors is a welcome (and frightening addictive) surprise.

Game designers, even before *The Sims* was released, had an inkling of what it would take to create games with appeal that crossed gender lines. Ernest Adams said, “I think it is time for some games like that so people can set goals that are of interest to them. If girls want to play a game that is not necessarily about violence, they can do it.” [34] Theresa Duncan, girl game designer, said of playing her games,

“It’s a process, like getting to know people. It’s not a video, it doesn’t present itself to you immediately, and all its secrets aren’t revealed; it’s more like a book, where you really have to spend time with it and its secrets aren’t revealed in an hour. And there’s no neat summation at the end once you’ve mastered it.” [35]

Though she was speaking of the games she had personally designed, she could just as easily have been describing *The Sims*. Early console and arcade games were often guilty of revealing most of their tricks in the first few levels. New monsters or aliens might appear in later levels with slightly more challenging skills, but the adjustments the player had to make were more of the fast-twitch variety rather than the cerebral type. What more recent game designers have hit upon is the intertwining of a more complex narrative structure into the game itself. Coupled with the introduction of characters who actually develop throughout the course of the game, this narrative framework has proven to be a huge draw for people looking for more intellectual stimulation from their computer games, rather than just fast-twitch running and shooting. It's more than apparent that women prefer this style of game, especially when victory is not a goal and the game doesn't end with a "neat summation" or any kind of reward for the player. Instead, the player ends the game when she wants to, freeing her from being told what to do and when to come up for air. (More about the presence and importance of narrative in games in Chapter 4.)

## **Violence**

The second video game ever to exist, *Spacewar!*, already contained a form of violence – players hit with the other player's torpedo would lose a ship and in effect "die" on-screen. It was an abstract sort of violence, unaccompanied by anything we would associate with actual, physical assault, but it was hard to deny the fact that one player shot at another player, and if the shot met its target the shooter won. Even the language was warlike: "shooting," and "torpedoes," and, of course, the name of the game itself. This didn't seem to bother many people, however, and video games pursued these battle themes in the early seventies without hindrance. Then, in 1976, a game called *Death Race* was released in the arcades, and suddenly violence in video games was the hot topic of the day. *Death Race* was centered around one or two people driving virtual cars, with the object being to drive around a cemetery running over "monsters" for points until time runs out. [9] The resemblance of the video monsters to people was close enough to set off alarm bells in many folks' minds, and the media got its first taste of the video game violence controversy that has raged, on and off, ever since.

The arguments for and against violence in computer and video games closely mirror those found in the violence debates surrounding television and movies. The primary difference in

games, of course, is that this violence is now interactive. A game such as *Death Race*, for instance, allowed players to steer a car that ran over a humanoid figure on a pixilated black-and-white screen, and when the monsters were hit they changed into gravestones. It is worth noting that the monsters could not fight back. A more modern game with violent content, *Quake*, is much more graphic with its violence – players run around mazes and environments with a first-person view of their virtual surroundings, carrying various weapons and shooting often at enemy soldiers and monsters, who are not defenseless and can attack the players with weapons or their own teeth and claws. When enemies are hit they die gory deaths, collapsing in pools of blood or throwing off body parts, all the while making strangled dying sounds. Some of the weapons are based on real weapons, like a shotgun, and some are completely fictional. More advanced games based on the same first-person shooter (FPS) concept even employ the clinically-named “locational damage,” which dictates that enemies hit in critical regions such as the torso or head die faster and in a different way from those killed with shots to limbs. At least one game, *Unreal Tournament*, even inserts a small reward to players with especially good aim – the words “Head shot!” are spoken in a deep, resonant, approving voice whenever one player takes down another with a single shot to the head.

It seems clear that if it was worth getting excited about *Death Race* and blocky white monsters being run over, it is worth becoming concerned about *Quake* and the many other games that contain violent content (and directly related to reality, i.e. humans appear in the game). Parents fear their children will be adversely affected by the sight and experience of “killing” another human being on the screen or monitor, and society fears that certain people who would not otherwise be violent will draw their ideas from these impressive graphical displays of combat, shooting, and gory death. Eugene F. Provenzo, Jr., a professor at the University of Miami’s School of Education, claims that “video games not only teach children about violence, but also how to be violent.” [37] Game developers argue that their brand of violence is nothing worse than what is found in a significant number of movies and television shows, and that it is not their responsibility to shield children from inappropriate content, but the parents’. They also take refuge in what psychologists like to call “catharsis theory,” which holds that playing aggressive games relieves people of their aggression, thus making them calmer after playing than before. [38]



To help parents choose appropriate games for their children, a ratings system similar to the ones used for movies and now television was instituted for computer and video games in 1995. Ratings range from “EC”, which means a game is appropriate “early childhood” ages three and up, to “AO” which stands for “adults only” and means that the “products may include graphic depictions of sex and/or violence.” Every game released must carry an ESRB rating, and an examination of the ten top-selling video games at the end of January, 2002 shows that five of them carry a rating of “E” for “everyone” (intended for age six and over), four are rated “T” for “teen” (age 13 and older), and only one, *Return to Castle Wolfenstein*, warranted an “M” rating for “mature” (17 and up), one step short of the “adults only” rating that tops the list. [39] Three of the top ten games are actually from the *Sims* franchise – the game itself and two expansion packs. All three received a “T” rating. This is merely a snapshot of one week’s game sales, but it is reinforced by the fact that in 2000 about 9% of all games released were given a rating of “M”, which statistically corresponds almost exactly to the recent top ten ratings distribution. [2]. In addition, the ratings for June 2001 showed only two “M” games in the top 20 bestsellers, again repeating the 10% proportion. A quick, informal scan of titles at the local game store also shows that most games carry a rating of “E” or “T.” While there are many who no doubt wish that there were no violent games unfit for children on shelves or top-seller lists, it could conceivably be seen as encouraging that *The Sims* and *Harry Potter & The Sorcerer’s Stone* and titles similarly rated dominate the games market overall.

In light of the concern and publicity surrounding video game violence, an objective look at its effect would certainly be worthwhile. In fact, a relatively small amount of scholarly research has been done on the effects of violent game content on players, especially children. Those studies that have been conducted vary widely in their research methods, and most rely on what could be considered loosely controlled gaming environments where children or young adults play video or computer games. After this “free play,” participants then either “self-report” their own aggressive thoughts and feelings or their aggression levels are measured directly, through behavioral tests. Results from the studies have varied. In some cases, no changes in aggressive behavior was seen, while in others definite short-term effects upon aggression was observed [38]. In general, younger children were found to be more affected by games with respect to increased aggression than older children, but the number of studies done has been so



few, and the methodologies so invariable (mostly free play observation), that definitive conclusions from the existing research cannot really be drawn.

This is not to say that violence in video games has no effect upon aggression; rather, further study remains to be done before anyone can speak knowledgeably on the subject. Certainly a solidly-conducted longitudinal study of aggressive behavior relative to video and computer game exposure would go a long way toward settling the debate. At the very least it would shed some light on an otherwise dimly lit area of science and human behavior. Gray areas exist in the games themselves – much of the violence can be termed “cartoon” violence, where non-human characters interact in ways that are clearly “hitting” and “kicking” but do not seem to suffer ill effects from the blows, or bounce back in a “cartoony” way and continue on. Is it violence when a small mustachioed man in overalls kicks a turtle shell, as in *Super Mario Bros.*? Questions like this make it difficult, but not impossible, to categorize and study computer and video game content and its effect upon players.

In the meantime, public opinion is generally not on the side of the video games. In 2000, both Sears and Montgomery Ward stores pulled “M” rated games from their shelves after a law enforcement sting found that 32 children were able to purchase such games unchallenged [14]. In Indianapolis, a law was passed requiring that arcade games with violent or mature content be segregated from other games on the floor, and that underage children not be permitted to play those games. Every year a group of Senators releases a report on violent video games, arguing that they are “antisocial” and “perverse” and should not be sold to the nation’s youth [40]. A hearing was held before the Senate Commerce Committee in 2000 to listen to the nation’s experts on video game violence which received widespread publicity, but resulted in no major laws being passed for or against computer and video game regulation [37, 41]

When speaking of games and behavior modification, the courts certainly do not subscribe to the notion that violent video games cause violence. Many judges have dismissed cases brought by citizens claiming that violent acts were the result of excessive exposure to video or computer games such as *Doom* or *Mortal Kombat*. The most recent suit to be dismissed was one brought by families of victims at Columbine High School, where two students killed thirteen and injured many others while roaming the school’s hallways heavily armed [42]. So far the legal argument that video games are as much or more responsible for actual physical violence have not been upheld, but if the tide of public opinion continues this trend may shift in favor of victims and

their families. If that happens, free speech arguments could come into play. Game publishers could argue that their content isn't any worse than the violence seen in the movies or television, and therefore could not be lawfully banned without invoking concerns of censorship. In a sense, video game violence is just the latest "moral panic" to sweep the nation, but that is no reason to dismiss such concerns out of hand. However, until formal research reveals significant long-term violent tendencies attributed to video games, this furor probably says a lot more about human nature and the morality of our society than it does about violent video games.

### **Addiction**

Video games, violent or not, have often been classified as "dangerous" to youth, and treated and spoken of as if they were a controlled (but not illegal) substance. It's not a far-fetched connection, either - the word "addiction" has been used in association with games in many contexts, and some leading researchers believe that games, especially the most immersive and graphically complex games from today's top developers. Some worry that too strong an affinity for the games "could feed other delinquent behavior such as stealing money to buy new games, truancy, failing to do homework, or simply extreme annoyance when unable to play." [43] Experts who feel that games are addictive don't necessarily set them apart from other forms of entertainment, such as television, in their intensity, but they say to parents who are worried about their children, "a parent can prevent youngsters from becoming addicted to too much TV or too many video games by establishing a pattern of selective viewing or by using video game material early in a child's life so that by the time a youngster gets to be an adolescent and there's very little surveillance or control, it's less likely to occur." [44] This seems consistent with the findings on aggressive behavior as well - limit the amount of exposure when the children are youngest and most impressionable, and in this case least likely to form strong habits in "undesirable" directions.

Still, it's not clear at all that the language of addiction is the right one to apply to these games. For anyone who has played them, especially well-designed games like *Diablo* or *EverQuest*, the thrill of winning and getting constant rewards is undeniably fun and difficult to put down. However, not everyone becomes addicted to video games, which suggests that a more complex chemistry of personality and susceptibility to a game's thrall exists. This kind of interaction should absolutely be studied more rigorously - quite possibly people who exhibit

“addictive personalities” in other areas such as alcohol or drug use could also be the most prone to excessive gaming. It wouldn’t be surprising to learn that the pleasure centers that cause physical addiction to drugs or even sex are also aroused during gameplay; while most gamers wouldn’t say that their favorite titles are as satisfying as those other activities, there could definitely be a small subset who might call it a draw.

Another common theme of the anti-video game lobby is that games are a desensitizing force, especially for children, and that they essentially lull the impressionable player into undesirable states that leave them suggestible to all kinds of dangerous behavior. Provenzo said:

“Essentially, I believe that the unreal, the simulation, the *simulacra* has been substituted for the real in the lives of our children. This occurs at many different levels: in the video games that are so much a part of the experience of contemporary childhood... and in the images of beauty and sexuality that run as a powerful undercurrent through much of our culture and the lives of our children.” [37]

Sherman and Hinkle add to this by pointing out that many children spend a large amount of time each day playing video games, which can be concerning to parents:

“Parents often see their children as becoming obsessed with playing, and the parents are able to see firsthand just how pervasive and powerful this gaming force is. One potential direction of this force is that it immerses children in useless, repetitive play that has the power to affect the ways in which they develop both emotionally and physically.” [45]

The impression that games are “useless,” along with the idea that the games can change the way a child thinks or acts, means that parents believe that their children are spending too much time in a wholly unproductive state of mind while allowing their values to be shaped by an outside force. In fact, it implies that the games have an almost hypnotic power. This could very well be a reaction to *watching* children play video games - the slack jaw, the unblinking eyes, the intense concentration - all of which are behavioral hallmarks of the hypnotized or otherwise socially disengaged person. The observer’s attention is focused solely on the player, rather than on the relationship between the player and the game being played.

The belief in the mind-altering power of the video game also implies that no other form of childhood play induces a state that is so dangerously influential. But some children are quite adept, even at a young age, of sitting in deep concentration while playing with toys, like dolls or action figures. These games can include spontaneously invented rules, beginning and end points,

and infinitely replayable scenarios. I'm sure many of us (or our parents) could all come up with stories of games we concocted when very young that were incomprehensible to anyone else but totally engrossing to the players. To watch a child immersed in their own non-video game play can be very similar to watching them play video games – they are lost in their own world, manipulating characters (maybe dolls or action figures), making up stories, dialogue, and environment and weaving a narrative around them all. Why is it acceptable for children to enter a fantasy world and enjoy controlling the characters when these games are not contained within a video game machine? Would we presume to judge children on the danger of their doll playing because they exhibited intense concentration and were clearly in “their own world” while playing? It would be like watching someone play a video game without being able to see the screen at all – what you see is a zombie-like human manipulating buttons furiously and maybe occasionally showing an outburst of emotion.

What is not taken into account when observing only the video game player is the action unfolding on-screen and their relationship to it. The player might be negotiating his or her character through complex twists and turns of a level, choosing between different paths based on a prior conversation with another character, or solving a puzzle. These seemingly trivial can actually amount to reasonably complex mental tasks - spatial memory and negotiation for the twists and turns, analysis and synthesis of previously acquired information for the path finding, or any combination of memory, dexterity, or logical deduction to solve the puzzle. If the observer doesn't see or understand what the player is doing within the game at any given moment, the importance of this mental activity is discounted almost completely, leaving just half the video game experience exposed to viewing and study. Yet if many parents were given synopses of what their child had accomplished during their last PlayStation2 session of Final Fantasy X, they might be pleased at the amount of logical decision-making and thought that is involved. The complexity of the feedback loop between the screen activity and the player's responses is difficult to understand unless you watch (and are familiar with) the actual game being played. To measure the elements of this interaction and somehow quantify them would be challenging, but that quantification is also essential to answering the questions about the value of games to a child's overall development.

## Education

With all the hubbub surrounding games with “mature” content, what can get overlooked is the fact that many games, especially simulations, are so realistic in their modeling of an environment that anyone playing them quickly learns some complex techniques are necessary in order to succeed. One of the best examples of this is *SimCity*, another smash hit from Maxis. The object of the game, if there can be said to be one, is for the player to take an empty plot of land which contains geographical features like trees, rivers, mountains, and lakes, and create a thriving “city” within its boundaries. Players cannot actually build buildings or create people, however – they must lure them with the proper combination of resources and incentives. The right configuration of water pipes, power lines, roads, and residential zoning will, for instance, cause the inhabitants to begin building their houses. But put industrial buildings too close by, or remove the power supply, and the sim-houses fade into abandoned ruins as the neighborhood’s residents leave for presumably greener sim-pastures. Beginner *SimCity* players almost always have a disastrous experience with their first city – the rules, if one even reads the manual, are not fully appreciated until they are experienced firsthand. Factors such as the city budget, taxes, morale, traffic flow, and air pollution must all be taken into consideration and carefully balanced to keep a city growing, and disturbing that balance by, say, not zoning enough land for industrial use can send the population into a temporary tailspin. In fact, the many rules governing sim-behavior combine to create a simulation that partially, but faithfully reproduce the experience of a real-life city planner or mayor. Because of this, the game really takes on educational value. The mechanics of the gameplay itself are simple enough for a grade-schooler to master, but the subtle nuances of keeping a city healthy could engross any adult for hours at a time (not that I speak from experience, of course). One of the most celebrated qualities of all of the “Sim” games is their open-ended design. The player does not “win” the game like in so many other titles; at best you can “play out” most of the game’s possibilities, build most of the structures, or develop all of the possible infrastructure, but unless a particularly bad disaster overtakes it (players can choose for disasters to happen at will or at random, then clean up after them) a city will continue on forever.

Other games, such as the *Tamagotchi* craze that swept the nation in 1997-98, could be said to teach children responsibility. The creatures needed more or less constant attention from their human masters – they began by hatching from eggs, then matured slowly with proper care



and feeding. A well-nurtured Tamagotchi could become a friendly presence on the small LCD screen, cavorting about making happy noises and generally acting healthy. A neglected Tamagotchi, on the other hand, was a sad sight that no doubt caused many tearful moments in households and schools across Japan and America – many schools actually banned the devices from classrooms because they were so disruptive and required too much attention from students. This skates dangerously close to the addiction arguments discussed earlier in this chapter, but the undeniable result was that many children who had never had a dog or cat to take care of were given the experience of responsibility over a “living” being whose ultimate form depended entirely upon how well they cared for it. Electronic or not, it is hard to argue that this sort of lesson is a bad thing.

One study being performed at MIT in conjunction with Microsoft, the “Games That Teach Project,” is even advocating that computer games be used to help teach students learn basic principles of science and engineering. In their words,

“[G]ames do offer teachers enormous resources they can use to make their subject matter come alive for their students, motivating learning, offering rich and compelling problems, modeling the scientific process and the engineering context and enabling a more sophisticated assessment mechanisms.” [46]

It's important to note that this study emphasizes that computers and games are merely tools to be used by the teacher, not any sort of replacement. This also assumes that the teaching software is well-designed and effective, which is the real difficulty. Designing games that are simply fun is hard enough; adding learning into the mix only increases the challenge. Still, intelligent design and requirements gathering from teachers would go a long way toward the creation of truly effective educational gaming software. Even some off-the-shelf titles like *SimCity*, as feeble as its simulation may be when held up to real life, might be able to teach simple lessons more effectively.

Games and educational software, while they are currently separate categories, could have a future together in the classroom. They are actually at similar stages of development right now – both have been in existence for some time, both are successful categories that have undergone several generations of improvements – but so far all games targeted at the educational market have managed to sacrifice a good deal of their entertainment value somewhere along the line. It

is time for someone to take it to the next level and develop a fantastic computer game that is also meant to be a teaching tool. I have every confidence that it will happen.

## Chapter 4 – Computer Games as High Culture?

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Much of the motivation for writing this thesis came from the popular opinion that computer games are not worth more than a cursory examination. Like many popular forms of entertainment that came before them, notably movies and television, games have grown up a labeled as “low culture.” This was arguably true in the early to mid-80’s, when a flood of Atari imitators dumped game after poorly-designed game into the market expecting to cash in on the flow of quarters at the arcades. Instead what resulted was a market that collapsed under its own weight, with companies motivated more by the economics than the gameplay. But a fair case could be made that the earlier games, those that were played on the original Atari systems and even earlier, had a minimalist elegance to them that is unmatched by any game produced today. The arc of the ships in *Spacewar!* across a circular screen, or the bare-bones simplicity of *PONG* with its two paddles and one line instruction, “Avoid missing ball for high score,” have an effortless connection to the essence of the computer game. The intimate sense of interactivity, what Janet Murray refers to as “agency,” [47] that is present in *PONG* is difficult to duplicate exactly in a first-person shooter like *Quake*, where the player is saddled with choices about movement, weapons, and path finding in complex environments. On the other hand these added elements, confusing as they may be to the beginner, ultimately take the player further into alternate worlds that are fully realized. The immersiveness of the single-player *Half-Life* or the strategic complexity of *Age of Empires* pushes the human brain into places it may not ever have gone before.

Apart from the visual aesthetic, the actual narrative structure of games has also come a long way since the early days of *Adventure*. *Pac-Man*’s protagonist was a complete mystery to the player – who was this “man,” and what is his motivation for wanting to move through a maze eating dots and avoiding ghosts? Now *Halo* has a plot and cast of characters that are integral to the progression of the game. In a remarkably short amount of time games have risen to the point where there are hints that they could offer a viable alternative to the more familiar immersive

narrative environments, specifically novels. No one is suggesting that *Moby Dick* will ever be replaced by the next installment in the *Final Fantasy* series, but there is a strong case that the imaginary worlds offered up by some of the best games of today hold the potential to be as immersive as, for instance, Tolkien's Middle Earth.

The art world has also begun to acknowledge computer and video games as pieces for exhibit. This is the least surprising of developments, considering that computer graphics have advanced monumentally since the days of black-and-white graphics on tiny screens. Even some screen shots that many game developers provide as previews of their coming attractions could be printed out and hung on the wall. Some artists have stepped beyond the bounds of the static image and attempted works that use games' interactivity, inviting gallery visitors to effectively step into the pieces themselves and change them with their presence. This is a tremendously exciting area of exploration that is still very much in a nascent stage. These electronic, interactive artists will produce many evocative and breathtaking works in the coming years – the digital da Vinci could in fact be incubating in a studio, creating the Mona Lisa with a Wacom tablet.

In only the past few years a community of gamers has come together to celebrate “vintage” games, which are classified loosely as games that run on outdated computers or consoles and can no longer be purchased new. These enthusiasts invariably enjoyed games like *Donkey Kong* or *Joust* as children in the 70's and 80's when they went to arcades or hooked up their ColecoVisions. Nothing cements a place in the cultural scrapbook like a healthy dose of nostalgia, and thousands of games for the early consoles and PC platforms are being resurrected. Whole web sites are devoted to tracking, collecting, and cataloging the games, either as cartridges or software ROM images. A huge number of people buy, sell, and trade older titles at conventions and through auction sites on the web – just around the corner from my house is a store called “Game Craze” that sells used games for the NES and other consoles after buying them fresh from closets and basements and shoeboxes. The concept that games are items of cultural heritage, to be cherished like silent movies or radio “oldies” and traded like baseball cards, speaks volumes for their effect upon the psyches of a generation, not to mention the hours of time that were spent in front of a television with joystick gleefully in hand.



## Literature

The interleaving of narrative, traditionally a concept that implies sequence and scripted development, with computer and video games, by nature an interactive medium with uncertain outcomes, has generated a good deal of discussion about the place of such games in the catalog of literary forms. Should they be given as much attention as “valid” genres such as prose and poetry? Should they be considered alongside movies in discussions of cinematic merit? What should we make of this “interactivity” that is so highly touted by the new media titans – does it sufficiently destroy the narrative as we know it, or does it in some way add to the complexity, perhaps in areas we haven’t even begun to explore?

To help put these questions in their proper context, we should first consult traditional literary criticism for help. The important and influential Canadian literary critic Northrop Frye, in his book *The Educated Imagination*, outlined his justification of literature in terms of the various levels of relationship that humans have with their external environment. Frye describes three levels, each more complex and requiring more imagination than the last. The first is factual – we observe what is around us, and we might record it. No imagination is necessary for level one. The second level is based on our likes and dislikes of the environment and things in it, which includes the actions we take to change them. We might build a shelter in an otherwise unsheltered location, or decorate walls with colorful artwork, or try to get other people to do our bidding. This level is the basis of human conversation, since most of what we talk about is related to other people or things and how we feel or what we think about them.

The third level is where imagination comes in. Frye defines it this way:

“This third level is a vision or model in your mind of what you want to construct....So we begin to see where the imagination belongs in the scheme of human affairs. It’s the power of constructing possible models of human experience. In the world of the imagination, anything goes that imaginatively possible, but nothing really happens.” [32]

This is where literature enters into the picture. It represents our attempt to explain, restore, or reshape our environment in a space that bears no direct relation to reality. All connections between the world as described in literature and what actually exists are purely constructs of our own minds. In this way literature can be used to communicate the author’s imaginative vision of a fictional surrounding without actually *doing* anything to make that reality come to life – if they did something, that would belong to level two, “the world of action.”

Video and computer games undoubtedly belong to the third level. It would be stretching it a bit to say that most games are “possible models of human experience,” but they are certainly alternate visions of the world. In fact, computer games are the best method we’ve ever had to visually illustrate the properties of an alternate reality, and to intimately share that world with other minds by giving them direct access to it, via interactivity. With the addition of the visual and interactive dimensions, these imaginary worlds are significantly different in one way from most traditional literature. They can be much more immersive with much less effort on the part of the observer. When playing a computer or video game, the “educated imagination” is both more and less involved in the alternate universe being presented. On one hand, a player is relieved of the responsibility that books place on us to envision their worlds, since in games the world is visually depicted. This would be no different from the movies if it weren’t for the nebulous “interactivity” that distinguishes computer games from their motion picture brethren. In this case, what is meant by “interactivity” is simply the ability to change the course of events, however minutely, within the imaginary setting. In this way, via a visual, interactive description of an imaginary world, computer games are both less and more than traditional literature of the type Frye is talking about.

All of this observation begs the question that has only been seriously addressed in the past decade or so: How do computer games fit in alongside traditional forms of literature? Do they deserve consideration as a new form, or are they merely an extension of an existing form? Frye says that all “new” literature is merely an extension of what already exists, then qualifies this by adding,

“I’m not saying that there’s nothing new in literature: I’m saying that everything is new, and yet recognizably the same kind of thing as the old, just as a new baby is a genuinely new individual, although it’s also an example of something very common, which is human beings, and also it’s lineally descended from the first human beings there ever were.” [32]

Owing that Frye is a giant of literary analysis and criticism, it would be sheer hubris to argue that computer games have carved out a completely novel genre of literature. According to him there must be recognizable elements of narrative, characterization, plot, and so on within computer games that relate them in a fairly direct way to the pre-existing methods of literary conveyance, and obviously there are many such elements. So computer game designers, although

they had a new medium, were not and are not creating new literary forms - the best they could do is base their creations on preexisting forms and go from there.

In many cases, especially with early games, developers were hard-pressed to insert even the barest of narratives. The first games were extremely simple, lacking depth or character interaction or compelling plot development. This can be partially blamed on the limited hardware capabilities of early computers – it's no mean feat to inject realistic characters, environments, and plot developments into 8K of memory. Within confines like that, it's hard enough just to program games that are fun with so little memory. Still, that's not a complete excuse. Without delving deeper into the motives and intentions of early game designers, it seems reasonable to assume that many of them simply weren't *interested* in telling stories with their games. What sold consoles and arcade games during the late 70's and early 80's was gameplay. *Computer Space*, the first arcade incarnation of *Spacewar!*, was a commercial flop mostly because it was too hard to play, and players were turned off by the complicated controls. [9] When *Space Invaders* and other well-designed, "fast-twitch" games came along, they were popular for their increasingly rewarding gameplay. The structure of scoring points for each successful action is a major defining element of arcade games, and the pursuit of high scores was (and still is) a primary goal of arcade gamers. Scoring, however, effectively replaces other sorts of rewards and goals in a game – one doesn't play to save the princess or destroy the evil conquering alien so much as one plays to beat the previous guy's high score. With players motivated by numbers and not characters or plot development, who needs narrative when it just takes up extra bytes, pixels, and development time?

Even those designers who tried to insert more story into their games were stymied by their lack of control over the narrative flow. Players could do many things to confound the script, like kill themselves midway through or simply turn off the game before end occurred. Giving them more control just made the situation worse. If a player can kill the one character who holds key information that is essential to finishing the level, then you've just given them a way to sabotage their own success. Going the opposite direction and imposing too much control results in frustrating limitations. Andrew Darley, in his book *Visual Digital Culture*, talks about poorly designed games that force the player to perform actions in a very specific order to allow the game to progress. As he says,



“Not [doing the actions in order] can entail a frustrating stasis: one gets trapped, endlessly running between all-too-familiar locations, revisiting the same characters and scouring the same settings, imprisoned and unable to progress further because a certain vital move is now denied one. Not only are the conventional limits of the game itself revealed at such moments, but so is its pre-programmed character: the element of control and choice it seems to offer is revealed as illusory - just as predetermined as the most formulaic narrative.” [48]

When a game allows situations like this to occur, it amounts to more than just bad gameplay, because the suspension of disbelief required for a good immersive game is temporarily shattered. Problems like this can be ameliorated with fewer limitations and more straightforward goals: win the race, beat the opponent, kill the bad guys who are attacking you, and so on. But does this mean a simpler game concept is the only way to better gameplay? Perhaps the general philosophy of those frustrated, order-of-operations games is what is flawed - they have taken the scripting one step too far and made a game almost unplayable. Nolan Bushnell says, “The first rule of games is clarity.... In general, you want people not to have to struggle with the game.” [49] But games that reveal themselves too quickly can also be too easily mastered. As Edward Rothstein says,

“The classic board game or card game begins with the rules; then comes the play. In video games the play begins and only gradually do the rules emerge. Finding the rules is part of the game.” [50]

A less invasive approach to game design could be to remove explicit restrictions on players and impose them on the environment itself. Games designed this way might help the player experience more freedom of movement and control than they would feel, for instance, in a *Doom* level, where objects and walls are visible and present physical obstacles, but cannot be harmed or affected in any way by the player's weapons. Freeing players to interact with everything is what games like *The Sims* try to do. Their unstructured, unscripted design results in a much more open-ended narrative structure, with multiple potential outcomes. What is important to note is that by relinquishing control of the story like this, not all of the potential outcomes are satisfying in the traditional narrative sense. It is the risk the designer must take - relinquish total control over the narrative flow in the hopes of stimulating the players to invent the narrative as they go along, trusting that players will create what is satisfying to them.

It takes some effort to come up with examples of computer games that contain a narrative as compelling or complex character development as immersive as those seen in books like *Moby*



*Dick* or movies like *Citizen Kane*. For example, one could certainly tell a literal tale of exploits within a game of *Quake*, detailing each successful “kill” or telling of some strategic cleverness within the game, but as Darley notes,

“The problem, however, is twofold: first, the fragmented character of this story passage - symptomatic of the game experience generally; second, the extraordinary poverty of such an ‘epic’ relative to other forms of narrative.” [48]

Part of this narrative poverty comes from intentions of the *Quake* designers at id, who probably never intended for the gameplay to constitute a story, per se, at all. Like many other games, this first-person shooter is not exceptionally rich in variety when it comes to gameplay – the player primarily runs, shoots enemies, and opens doors. In the single-player version, variety consists of new environments and new enemies set in different locations. In the multi-player version, the only enemies are other (human) players who play on other computers on the network, but the intelligence and unpredictability of human players fighting each other can occasionally produce an interesting sequence of events which, if told properly, might be a compelling narrative. These moments don’t happen all the time, however, and they lose something in the retelling when the listener can’t watch an “instant replay” of the action. It would be like describing a legendary moment in sports without the videotape – an essential part of the narrative is missing, expressly because the story is not strictly *words* but is actually based upon human actions. Whether or not they occurred in the physical realm as opposed to the virtual is only tangentially relevant to the quality of the narrative. Without a continual, well-constructed narrative, games like *Quake* lose any sort of cohesion and devolve into mere repetitive action. This isn’t the end of the world as far as gamers are concerned – there’s undoubtedly a place for frantic shooting in games – but it’s a bit like playing chopsticks on a Steinway Concert Grand piano. They (the designers) have got the instrument, they’ve got the skills to make it sing, but instead they choose to write childish etudes.

One company that goes beyond the empty narrative composition is Bungie, now a game development studio within Microsoft. Their highly successful game *Marathon* was released in 1995, and it contained a complex, interwoven storyline that was immediately attractive to gamers. It bears retelling here if only to demonstrate the richness and ingenuity of it. At the beginning of the game, the interstellar colony ship *U.E.S.G. Marathon* is being sent from Deimos to establish a colony in the Tau Ceti IV solar system, many light years away. On the journey, one

of the artificially intelligent computers onboard called "Durandal" becomes increasingly unruly, eventually entering a stage called "rampancy," meaning that the AI has become dangerously unpredictable and out of human control. When the *Marathon* reaches Tau Ceti IV, Durandal summons a nearby ship full of alien slavers, which vaporizes the colony's port and begins to enslave all the humans. This is where the first *Marathon* game begins, with the player taking the role of the colony's "savior" against the alien race and the rampant AI Durandal. [51] The story actually goes on from there into much more detail, with two other AIs becoming involved as allies to the player, then ultimately being turned against him.

The real genius of the *Marathon* series of games is that this story is not simply used as backdrop for the gameplay itself. Throughout each game the story is constantly used to explain why the player is doing what he is doing. For example, on the first level the player meets "Leela," one of the ship's artificial intelligence computers, who introduces herself and explains the outlines of the aliens' attack upon the ship. Via the terminal, Leela says,

\*\*\*INCOMING MESSAGE FROM LEELA\*\*\*

Welcome to the Marathon. I am Leela, one of the two surviving Artificial Intelligences aboard the Marathon. I have been severely damaged, and am working to understand the current situation.

Find the teleport terminal located in the Hangar's control room. By that time, I should have a better idea of what is going on.

\*\*\*END MESSAGE\*\*\*

From the outset, the player is made to feel as if the story is carrying them along, rather than the other way around. It is the voice of Leela that asks the player to kill the invading aliens, not disembodied instructions that come from "outside" the gameplay. It is also Leela who gives the player a mission to transport certain hardware around the ship to repair damaged defenses. As the game continues, and players find more terminals, the steady voice of Leela gradually deteriorates, as Durandal gains control over her and his madness ruins her coherency. The player's missions shift in focus to become more about self-preservation against the evil mind of Durandal. At the end of the game, however, when the player is facing a final showdown with a roomful of aliens, one of the alien species that has been hostile suddenly switches and fights

alongside the main character. As it turns out, Durandal had been secretly infecting these aliens with his own code in an effort to save the ship and, by extension, himself.

The above story, though it is significantly truncated from its complete version, contains many elements of the traditional narrative. There are distinct characters pitted against each other in a conflict; there is a single protagonist with a mission to save something of value to him; there is a blocking character, in the form of a computer AI, which stands in the way of this mission being completed; and there is an overarching victory combined with a clever plot twist that makes the ending both surprising and satisfying. What makes it remarkable is how the narrative content is woven into every element of the game, from level design to character interaction to the various tasks and sub-tasks the player is given to do moment by moment within the game. Game mechanics are still important – if *Marathon* the game had had poorly designed controls or cheap-looking graphics, it probably would have flopped – but the addition of a detailed and engrossing narrative made the game a huge success. Today the “Marathon’s Story” web page is still receiving updates and interest from the community of gamers who enjoyed the game so much, and the economic payoff for Bungie was such that they have now produced *Halo*. Interestingly, several of Bungie’s games have tied into this main story line of the *Marathon* and the alien invaders, *Halo* included, in much the same way the *Star Wars* franchise of George Lucas has managed to create and extend the alternate universe of the Rebel Alliance, Jedi, and the Empire.

In her book *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*, Janet Murray talks about an idea of Marvin Minsky’s called “frames.” [47, 52] In Minsky’s own words, “A frame is a data-structure for representing a stereotyped situation, like being in a certain kind of living room, or going to a child’s birthday party.” Each frame contains its own data, and each frame interacts with other frames according to certain conditions, whether situation, physical, or temporal. Each frame has different “terminals” covering it which store information about the frame itself, or descriptions of sub-genres of that frame. Attributes could be frames themselves, thus creating a rapidly expanding “framework” upon which knowledge is based. Murray points out that this is an excellent method for “specifying formulaic structures.” [47] Indeed, this is why Minsky formulated the concept in the first place, as a method for building better artificial intelligence algorithms, specifically ones that didn’t take a “top-down” approach to teaching the computer. In other words, an intelligence made up of frames would begin at nothing and slowly but steadily construct and fill new frames for each object, situation,

or attribute encountered and learned. This is rather what Minsky was postulating about the way our human brains work, and in the past nearly three decades his theory has been well-supported by robots and AI programs that use this “bottom-up” approach to learning.

When it comes to constructing a narrative, the way *The Sims* is designed is actually a good representation of Minsky’s “frames.” Each object in the sim-world carries with it a set of properties, methods of interaction with other objects, and the current state that it is in. All of these attributes combine to determine how the object fits into the ongoing narrative - if the dishwasher is broken, people cannot put dishes into it, which means that the dirty dishes must be done in the sink, or not done at all. If too many dirty dishes are lying around, some characters could become unhappy (depending upon how high their “neatness” attribute is in their personality traits). Unhappy characters interact differently with other characters (and even the players), and so on. The narrative unfolds in very different directions based upon states and properties of these objects, or “frames.” Frames essentially suggest an object-oriented approach to digital narrative construction, which is exactly what *The Sims* is. Granted, thousands of other programs are also based on object-oriented methods, but in this case the objects are actually being used to *represent actual objects*, with the express intent of modeling human behavior, however crudely. Based on Minsky’s initial sketch of the framework model of intelligence, *The Sims* is something far more important than a computer game – it is the first step toward a real-time model of human behavior.

To look at the game, this suggestion might seem more than a little laughable. After all, sims are limited to only about five or six different types of interactions with objects, and never more than eight or ten interactions with each other. There are many behaviors that are sketchily modeled, while others are left out altogether (sims don’t take part in the building of their houses, for instance). But the concept of frames is there in every object and interaction. Undoubtedly future versions of the game will edge closer to the complexity we experience every day in our own lives.

## **Movies**

Video games have traditionally been seen as an entirely different form of entertainment, with a place alongside and not overlapping with books, movies, and television. That was back in the days when graphics resembled nothing more than colorful squares of confetti moving around



a screen, and sound was a series of tones that varied in pitch, but not timbre. Movie theaters happily placed arcade games in their lobbies to keep patrons (generally the young male ones) happy while they waited for the movie to start. Atari consoles were bought in department or electronics stores, and movies were bought or rented on video at the local rental outlet.

That time has passed. Now that games can and do look breathtakingly real, they no longer coexisting peacefully with motion pictures; instead, they are increasingly vying for the same audience. Wolf observes,

“In the area of exhibition, video games compete for audiences at the same sites as film and TV: most multiplex theaters have video games in the lobby, if not separate side rooms devoted to them; home video game systems use the television set itself, encouraging their owners to play game programs instead of watching broadcast programs; and video rental companies, such as Blockbuster Video, also rent games and game systems.” [1]

The machines in the theater lobbies are no longer a diversion, they are the main attraction. Most importantly, from a sociological perspective, people who play games prefer them to other forms of entertainment, including television. [23] Like movies, new video game releases are announced with tremendous fanfare, boasting television commercial campaigns, lines of eager buyers outside stores, and reviews in magazines and web sites rating the games before they are even available. The trend is unmistakable, so much so that it's tempting to start calling games the new motion pictures, but upon closer examination the similarities between the two is superficial at best. The genres have a good deal to learn from one another, but in the end they each suffer from limitations that prevent them from actually *becoming* each other.

It is no coincidence that video games and movies are often mentioned in the same breath. At this writing, the highly anticipated *Star Wars: Episode II – Attack of the Clones* is just days away from release, and from the previews and trailers it is striking how much the imagery in this movie resembles the current top-flight video games. In fact, the *Star Wars* franchise has spawned a number of successful games itself, including *Dark Forces*, *Jedi Starfighter*, *Rogue Leader*, and an upcoming MMPORG, *Star Wars Galaxies*. [53] The George Lucas empire includes its own unit for game development, LucasArts, which has this to say about its games:

“Each title combines vital film elements — compelling storytelling, painstaking character development and vivid settings — with the most sophisticated technology available to game makers today. As interactive games more aggressively compete with film and television for entertainment mind-share and

dollars, LucasArts is on the cutting edge of visual effects, 3D animation, live action video and interactive digital sound. Additionally, the company makes interactivity — or "gameplay" — a priority in its products since it is that element which distinguishes our art form from more traditional, linear mediums." [53]

It's clear from this text that the developers at LucasArts know well the strengths and weaknesses of games in relation to movies. Their acknowledgement of key elements like storytelling and character development reveals their cinematic roots, and in reality their titles are almost invariably of good quality, gameplay as well as narrative. Still, one wonders if there isn't something inherently contradictory in belonging to a conglomeration that includes one of the most successful filmmakers in the world while also admitting that your very product, video games, competes with films for "mind-share and dollars." This kind of corporate cannibalism will crop up increasingly as the major entertainment companies realize, one by one, that they can no longer ignore computer and video games as a medium. Sony did so several years ago with the PlayStation, but another media giant, AOL Time Warner, lacks any sort of significant game presence (the last they had was when Warner Communications bought Atari). Even the movies released by Warner Bros. Pictures lack any significant video game presence, with the possible exception of *Pokémon 2000*, which was a (hugely successful) game series only after it was playing cards and cartoons.

Other studios have capitalized much more on the popularity of video games. Recently there has been a resurgence in the release of what I call "game-movies." *Tomb Raider*, *Resident Evil*, and *Final Fantasy: The Spirits Within* were all inspired by concepts that originated in computer games, which is not an entirely new phenomenon. But where movies in this genre used to be much more *about* video games, e.g. *WarGames*, *The Wizard*, they are now beginning to resemble the games directly. *Final Fantasy* in particular is a breathtaking example of how far filmmakers can stretch the current graphics technology. The *FF* franchise has always been known for its Japanese anime-style character animation, but the movie attempted to create realistic-looking human characters using only computers, with varying success. Characters had amazingly detailed hair and skin textures, and the lighting in the film was equally stunning, but when the characters spoke the illusion was broken. The production company, Square, worked hard at synchronizing the mouth and facial muscles with the speech recorded by the voice actors, but unfortunately our eyes are trained to pick up even the slightest discrepancy between sound and facial movement. Consequently, much of the movie's speech has a vaguely dubbed quality.

This has the effect of de-humanizing what are otherwise startlingly real renditions of people (many who saw the movie's trailer who thought it was a live-action production).

What may be even more curious than the *Final Fantasy* movie's failure to suspend disbelief is the fact that most movies that have ever germinated from a video game have been commercial flops. *Final Fantasy: The Spirits Within* cost \$137 million to make, but only grossed \$61.3 million in its first month of release, \$11.4 million of which came on opening weekend. [54] These are dismal numbers, and the film was extremely disappointing for the production company, which actually closed its doors early this year. *Tomb Raider* was also a box-office disappointment, as were previous video game movies like *Wing Commander*. In fact, only one movie based on a game has ever made a profit – *Mortal Kombat*, released in 1995. [55] Given the popularity of video games, and the well-known penchant of the American public for action-packed, colorful movies, what exactly is going on here?

The answer is not exactly easy to pin down. Despite its success, no one is going to give *Mortal Kombat* the academy award for best acting or best screenplay anytime soon. In this it shares a lot with the other game-movies – they tend to be poorly acted, weakly written, and about as uninteresting as their corresponding games are interesting. This doesn't tell the whole story, however, since plenty of movies that are by no means screenwriting masterpieces still do very well each year at the box office. *Mortal Kombat* probably managed to ride the wave of popularity of its parent game, but it also contained exciting, well-choreographed martial arts scenes and rich sets that made for entertaining, if not thought-provoking, viewing. In contrast, the target audience for many other game-movies has often been left deeply dissatisfied by the adaptation of their favorite games to screenplays. Without good narratives, movies like *Tomb Raider* bear much less repeat watching as they quickly degenerate into spectacular-looking but spectacularly dull recreations of their video game inspirations. Based on audience turnout, nobody wants to go to the movies to merely *watch* a video game.

*Resident Evil* was not exempt from the poor box office performance, but the director, Paul Anderson, did at least try to do a faithful adaptation. Anderson, who also directed *Mortal Kombat*, seems to understand the relationship between video games and their movie counterparts, and it probably doesn't hurt that he's a fan of computer and video games himself. Anderson says of *Resident Evil*,

“What we're trying to do is give added value, to really deliver to gamers the things that they like from the game-the intricacy of it, the horror, the scariness, the blood, the kind of sexiness of the way the characters look. All that's in the movie. But we're trying to give some added value as well-some explanations about the world and the creatures that doesn't exist in the games.” [56]

This kind of intention sounds much like the *Star Wars* philosophy, which is to take an existing long-term narrative and weave a new story into it, incorporating characters and venues that are familiar to fans but at the same time adding depth to the well-known narrative by inventing new, interesting elements. The danger here, of course, is that the movie's creators might assume too much prior knowledge from the audience, thus alienating everyone except those who know the back story to begin with. The impression in the public's mind of a game-movie is that it is intended strictly for people who have played the game – any game-movie that doesn't successfully overcome that pre-existing notion will not succeed at the box office, at least not until there is a game that most moviegoers have actually played. Sadly, a *Pac-Man* movie was never made and probably never will be. Which is a shame, because *Ms. Pac-Man* would make the perfect sequel.

Game-movies that lack narrative are committing the same sin that many video games themselves do, and probably for the same reason – a good narrative is just *hard*. Writing is not a talent that everyone possesses, but without interactivity screenwriters need to try harder to adapt a video game aesthetic into something that is richer and more satisfying to both gamers and non-gamers. Just because movies are based on pre-existing visual forms like games doesn't mean that they can rest on their narrative laurels – if anything, it just intensifies the need for better plot, characters, and conflict to make up for the loss of immersiveness.

## **Art**

The art world is a major contributor to the “high culture/low culture” debate that surrounds computer and video games, but it is also the area where they have made significant progress toward validation in recent years. If one purpose of art is to provoke strong reactions and introduce us to new varieties of imagination, then it could be said that games have already attained artistic status. Many artists have recognized the potential for interactive environments and high-resolution graphics to enhance their work, and several exhibits, generally temporary ones, have been organized to explore interactive computer art. None of this has been enough to silence the voices that oppose games as art, however. The tension between entertainment and art



within computer games is growing, in part fueling the interest in the study of games, especially where the focus lies beyond the “fun” aspect. There are also those who believe that the stir computer games are causing simply by garnering this kind of attention in the art community instantly validates their artistic status. The opportunity to meld image, sound, narrative, and action into a single medium is bringing computers from the fringes of the art world into the center of the room, and the hardest pill to swallow for the art world is that games are leading the way. When the digital arts festival Ars Electronica presented one of its Golden Nica Awards to a computer game, many in the art world were upset, . [57] Ars Electronica director Gerfried Stocker said, even before the festival began,

"I strongly think that developing games can be an extremely artistic activity, as, for example, making films can be. Films can be very artistic, but of course most of the movies we see are not, they are just entertainment. I think the same thing will happen with computer games." [58]

Once the award was given, it touched off a brief spate of controversy in the art world. Hardly unusual, especially where digital art is concerned, but very important for the ultimate recognition of games as an artistic sub-genre.

Historically, game developers have always thought of themselves as artists, at least in the visual sense. When the hardware was limited, as with the original Atari or Intellivision consoles, the graphics couldn't be very complex or interesting. As a result, the “sprites,” or moving objects, that were displayed on screen looked thoroughly artificial. The number of colors that could be displayed at once was initially limited to two – white, green, or amber on a black background – and grew slowly along the powers of two, from four to eight to sixteen and so on. Today, the graphics capability allows literally hundreds of sprites and millions of different colors can be displayed. The resulting scenes are breathtaking. Games created for Microsoft's Xbox, the most graphically powerful game console ever built, have an artistic quality straight off the screen (see Figure 2, below). “We've come a long way since batting a square ball around, “ says Nolan Bushnell, Atari founder. “It wasn't square because we wanted it to (be). It was square because it had to be.” [49]

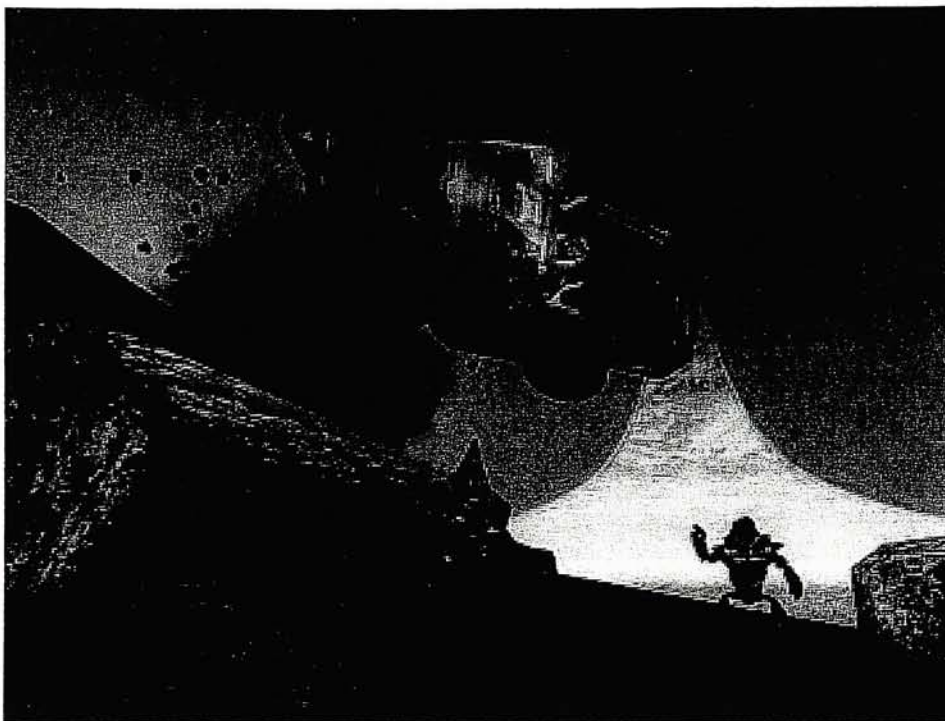


Figure 2: *Halo*, courtesy Bungie.com

Despite the artistic appearance of video games, the game developers themselves do not always exhibit what might be called “artistic sensibilities.” Recently, the “holy grail” of computer graphics, and by extension game graphics, has been to reproduce *reality* in as minute detail as possible, much like the *trompe l’oeil* painters of the mid- to late-1800’s. The full length animated feature film *Final Fantasy: The Spirits Within*, (discussed on page 65) is an excellent example of this trend, and in the game industry leading designers like John Carmack of id software have traditionally expanded the capability of graphics code to display or “render” various details that mimic reality. A new “game engine,” or piece of code that controls the virtual environment where the game’s action takes place, typically adds features that enhance the appearance of lighting, shading, reflections, physics, and fabric motion. (Clothing, especially draping robes or dresses, is a particularly challenging problem that the ancient masters of painting struggled with. Now the new masters of computer animation must contend with the added complexity of clothing in *motion*.) Recent additions to modern game engines have included “particle” systems, which allow a realistic clouds of smoke, sparks, and fog; “persistent terrain deformation,” which is a convoluted way of saying surfaces that are damage stay damaged; and “inverse kinematics,” which incorporates virtual “skeletons” into human

characters so that subtle motions like weapon recoil result in the realistic body reaction, e.g. arms and torso jerking backwards.

In the context of today's boundary-pushing post-modern art, the digital artists' drive for realism is a curious one. It is as if the digital artists must first pass through the same *trompe l'oeil* period before they can move on to other challenges. Some people are frustrated by this fanatical pursuit of exact reproduction, since they realize, as Frye might have, that computer games are a tremendous opportunity for artists and designers to reach *outside* the real world and paint a picture of an alternate reality, one that exists only in Frye's third level of imagination and is interesting enough to be shared with other people (see "Literature", page 56). Again, Edward Rothstein weighs in, saying,

"In games, reality can seem beside the point. Carved boards, decorated cards, dotted cubes and colored pebbles become instruments of war. The fate of a bouncing spheroid determines one's fortunes. The more artificial an object is, the more arbitrary the restrictions are on its movements, the simpler the rules governing the play, the more powerful a game seems to become. A game establishes its own world." [50]

It is exactly this simplistic, otherworldly feeling that games capitalize on – take a look at *Pong*, *Tetris*, or Shockwave.com's *Castlemouse* for examples of abstract concepts that become alarmingly addictive, and therefore powerful as games. Looking at many of the popular games, though, one might think that representing anything but reality was taboo. Even *Halo*, set as it is in a fictional circular world, still has green grass, blue sky, clouds, and faithfully modeled laws of physics that behave exactly as we'd expect them to on Earth (see Figure 2, above). Where has the desire to create an alternate universe gone? Instead of Xanadu and Pleasure Domes, we're getting weapon recoil and lovingly rendered explosions.

Developers are not unaware of this phenomenon. *The Sims* designer Will Wright says,

"I think that we need to kind of get outside the box of trying to do super realistic graphics and reproducing reality down to the last detail. Instead, look at all the alternate worlds that we can do on a computer that we really can't experience anywhere else." [59]

In the days of *Q-bert* and *Space Invaders*, when developers simply didn't have the technology available to represent reality in a believable way, designers were essentially forced to come up with alternate worlds, where simpler rules and objects existed. Imagination was a necessary tool when the muse for good-looking games was not accessible merely by looking out a window.



Now it's clear, at least for the moment, that games are headed toward a time when they are indistinguishable from things we see every day. One can only hope that once this is possible, more game designers and digital artists will move on to the creation of interactive worlds *unlike anything we've ever seen*.

In the meantime, art and games continue to find new ways to combine themselves. The Massachusetts Museum of Contemporary Art put on an exhibit called *Game Show* which showcased several physical and computerized games by various artists. [60] Former game developers have created an installation that invites the gallery visitors to participate in it, presenting them with a computer-controlled puzzle occupying the entire room which is nearly (but not quite) impossible to solve. [61] A Chinese artist named Feng Mengbo has created a version of *Quake III Arena* that includes his own image as the fighting character, carrying a video camera as well as a weapon to signify his childhood desires to both enter the Chinese army and be an artist. [62] Art is even being created from simple screen captures of games in progress. Greek artists Miltos Manetas has shown oversized prints of frames taken directly from games, sometimes digitally altered and other times reproduced just as they were. [63] Looking at the prints, one is struck by the stillness of them, especially if the games are familiar ones. Manetas manages to take a character like Mario, who is friendly and active and approachable in the game, and make him seem almost forlorn, frozen in a moment as he runs across virtual terrain. The frames that were meant to be fleeting moments in a bigger journey have become still-lives, and suddenly the image of a *Quake* character's imaginary hand holding a gun seems far more menacing than fun.

In the sonic arena, an underground community of musicians takes familiar theme songs from classic games and arranges them into different musical genres; for instance, the Tetris theme (if you've ever played long stretches of Tetris, doubtless you can hear it now) becomes a salsa tune, or is put to a reggae beat. [64] The art has also leapt out of the screen altogether: a pair of artists in New York city recreated a café from their youth and filled it with customized videogames, with the added dimension of video cameras filming the gamers as they played. Other patrons were given the ability to overlay text comments onto the video as it is projected onto the wall. [65] This made a relatively private activity into a very public one, placing the camera on the gamer much as the gamer is given a camera into another world, and making them accountable for their actions by inviting feedback from the audience.



So long as the tension between art and entertainment remains unresolved, as “high” culture meets “low” in the clash of the elite and the profit-driven, the debate about computer games as art will likely continue to grow. In the process, game designers (and everyone else) are being faced with the question, “Where does the game end and art begin?” A new generation of artists that grew up playing computer games is unafraid of creating exhibits that flirt with the “boundaries” between fun and thought-provoking. As they continue their flirtation, and as they become more familiar and technically adept with interactive technology, new works will be introduced that delight, fascinate, challenge, and offend us.

### ***Nostalgia***

Just as the youth culture of a specific generation is now being recycled on “oldies” radio stations and television channels like American Movie Classics and TV Land, the video and computer games of the 80’s are being brought back by aficionados who remember the halcyon days of arcades and Ataris. These dedicated people rebuild *Pac-Man* arcade machines and slave over “emulators,” which are applications that mimic the computing environment of early game machines so that the original games, or electronic copies of them, can be played on modern hardware. [66, 67] The first generation to grow up with Atari and the arcade games are beginning to start families of their own, and along with that we are seeing a significant shift in the gaming demographics. A child of ten in the mid-80’s is now an adult of nearly 30, and the inevitable eighties radio stations and “Knight Rider” reruns are being supplemented, by the resurgence of vintage computer and video games.

The world of computers may be notorious for having a short memory when it comes to anything with an age measured in years, but many are bucking that trend and expressing a preference for older games and their corresponding hardware. It’s this generation’s equivalent to going to drive-in movies in a ’57 Chevrolet, with an extra veneer of delinquency. The Classic Gaming Expo is being held in August of 2002 in Las Vegas, and attendance is expected to be in the thousands. [68] Intriguingly enough, the CGE is boasting that several *new* titles will be released at their show. This means games developed for platforms no longer commercially available are still being eagerly anticipated by the classic gaming community. The industry crash of 1984 actually turned out to be a boon for today’s collectors, because many console games that were in production at the time were simply left on the shelf, unfinished. [69] Those games are

still being discovered on programmers' shelves or in boxes full of forgotten cartridges, and this has a great amount of cache in the vintage gaming community.

Part of the appeal can also be explained by the generation chasm that divides video gamers from non-players. There seems to be a divide between those who owned an Atari system and those who decry video games as a bad influence on children. As Jonathan Katz puts it,

"In much the way the late anthropologist Margaret Mead predicted, the older generation and many of its leading institutions -- education, politics, media, education -- has unleashed a furious attack against gaming and its culture, so that the term has become synonymous with addiction, obsession, even violence." [70]

Video games basically occupied the same space as rock and roll or dancing did previously, and from the mid-70's through today they have become a species of that ever-present forbidden fruit. Katz opens his piece by quoting a popular "cheat code" sequence for the game *Contra* on the original Nintendo Entertainment System – "Up, Up, Down, Down, Left, Right, Left, Right, B, A, Start." [70] For those familiar with it, the words are a mystical chant that when followed earn the player 30 "lives", or chances in the game, instead of merely three. Beyond that they act as a kind of secret handshake that gains one entry into the club of vintage video games. It's not hard to understand why people would want to dig out their old consoles and dusty joysticks – they want to belong to that club again, one that "adults" could never join or even understand.

The movement to resurrect an age of blocky sprites and "bleep-bloop" sound effects seems odd at first when placed against the backdrop of the astounding array of modern games. Certainly the graphics on the PlayStation 2 put the consoles of the 70's and 80's to shame, as do the music, sound effects, and complexity of games like *Halo* or *The Sims*. Comparing older computer and video games with the games of today hardly seems fair, but in many ways the apple hasn't fallen far from the tree. Newer games hew to the same themes that their predecessors did, since the video game industry is cutthroat and proven design concepts are less risky. So *Mortal Kombat* (see Figure 3) and the fighting game genre have survived to become *Virtua Fighter* (see Figure 4). The same basic principles govern both games: two player face off in a ring or arena, with each player trying to knock the other senseless using martial arts moves in combination. Different characters in the game, which can be chosen at the outset by the human player, have different "special abilities" to use. One character might have the ability to throw

fireballs, another might possess a special “super-kick” that inflicts double the damage of normal kicks. The games, for all they have advanced in appearance, sound, and gameplay, are essentially identical. Even the “health meters,” red and green bars which indicate the damage done to each fighter, are in the same location at the top of the screen.

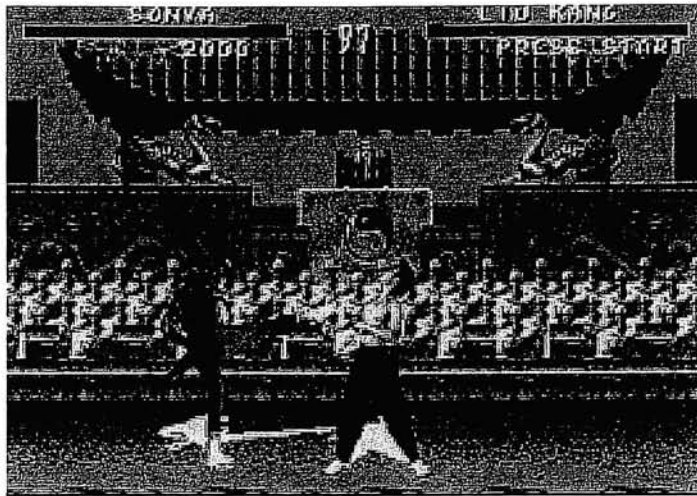


Figure 3: *Mortal Kombat* for Sega Genesis, courtesy vgmuseum.com

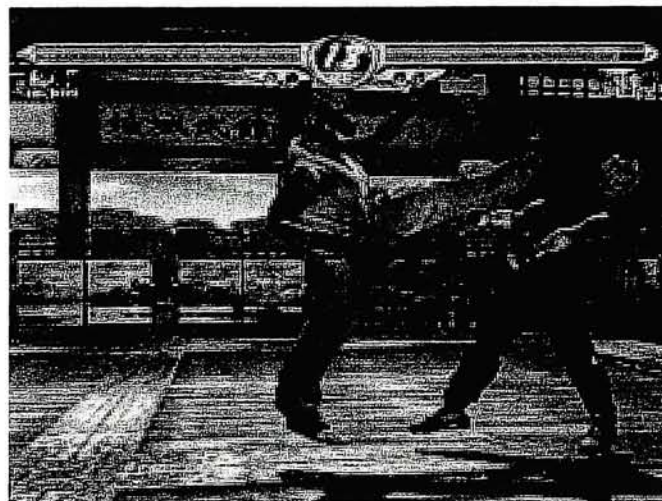


Figure 4: *Virtua Fighter 4* for Sony PlayStation 2, courtesy Sega.com

There is one important difference, however – today’s games offer a good deal more complexity. In *Mortal Kombat*, character choice was limited to around six different characters – *Virtua Fighter* offers thirteen characters, each faithfully reproducing a real-life fighting style. *VF4* also allows players to create and train their own character, and even customize their appearance. *Mortal Kombat* characters each had two or three special moves they could attempt during a fight – in *VF4*, not only do the characters have more moves (all of which are associated

with a certain button sequence or combination on the game control pad), but there are secret moves that are only unlocked after players have advanced in the game. Even the fighting arenas are multi-tiered and three-dimensional in the latest games – *Mortal Kombat* offered only two-dimensional backdrops and a single space one screen wide for battle.

The end result is that *Virtua Fighter 4* offers players far more fighting variety than *Mortal Kombat*, but the price is a steeper learning curve and more bells and whistles to wade through before the fighting actually begins. There was a certain simplicity to games of the *Mortal Kombat* generation that in many ways made them more appealing. You could turn on the console, insert the game cartridge, and in seconds be up against your opponent, using your fifteen or twenty different kicks and punches against their identical set. Strategy came down to the move sequence and timing, and in many cases sheer luck. Nowadays, strategy comes in at several angles – which fighting style to use against the various characters, which of the five or six special move button combination to push, when to jump backwards versus somersault forwards, and so on. Luck is fast fading from the scene as skill becomes more essential to gameplay. A player who masters a game like *Virtua Fighter 4* probably ends up more satisfied in the end, but the playing itself is more of a skill and time investment than the quick skirmish that *Mortal Kombat* offered.

Feature comparisons aside, however, the powerful appeal of vintage games are their roots in our childhood memories. The Proustian connections that a screenshot of *Frogger* can conjure up for some folks are enough to spark all kinds of emotions. Sometimes these reactions are strong and positive enough to push some people peddle “abandonware” on their web sites over the objections of the original publishers, many of whom are still attempting to make money by re-releasing classic games commercially. [71] Ultimately the behavior of the digitally nostalgic is not as much about the games themselves as it is about the integral role games played during an impressionable time of their lives. There may be no more powerful proof of the cultural impact of video games.



## Chapter 5 – Online Computer Gaming

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Games existed for the longest time in isolation. Each game session was conducted on a single computer, for a finite amount of time, with one or maybe two people participating. Once the game was over, everything that had been accomplished was lost, except perhaps the score if it happened to be high enough. In the arcades, new people stepped up to the machine and began a fresh session; at home, the console was shoved under the TV set and turned off. Games were ephemeral, like their analog cousins. In the early 80's the home computer introduced the concept of the "saved game," whereby the player could take a snapshot of his or her progress within a game and return to it later, confident that the computer disk retained all the necessary information to put them exactly where they had left off. Games finally had some kind of continuity, and they could be longer and more complex (especially at home, where games weren't timed like at the arcade and there was no economic pressure to keep the quarters flowing). Console strategy games like *The Legend of Zelda* for the NES even contained tiny batteries inside the game cartridge, allowing console players to save games too and giving them a break from games that took many hours to complete.

If technological advancement had stopped at this point, computer games still would have had a good deal of latitude to grow and evolve. Thankfully, it didn't stop. The explosion of the Internet in the 1990's created a brand new landscape for games to explore. Now instead of being confined to one hard drive or memory card, they could be spread out over many people's computers, with each player getting their own perspective onto an electronic landscape that could contain hundreds or thousands of people at once. Online gaming was a phenomenon poised to happen, and the past decade has seen several exciting trends emerge.

### **Internet Communities**

Before most Internet connections were fast enough to support simultaneous real-time gaming between computers, online games were available in other forms via services like Prodigy. I can just remember playing a trivia game I believe was called "GUTS" on Prodigy

back in 1991, where contestants were given a series of increasingly difficult trivia questions and only a minute or two to come up with the correct answer for each. Points were awarded for speed if you got the answer right, and if you weren't willing to cough up a guess you could quit at that point and take what points you were given. One wrong answer and you lost all the points you had earned and were out of the game for that round. The whole concept of the game was to see who had the "guts" to move on to each successive question; the player with the most points at the end of a round won that round and prizes along with it.

As it happens, I checked my memory against fact and found out that *GUTS* was in fact created by Seth Godin, founder of Yoyodyne Entertainment, Inc. [72, 73] It turns out that the trivia game is the most popular online game ever, having been enjoyed by over 3 million people. One game actually went on for several weeks, one question per week. So players who accumulated points had done so over a long period of time, making the decision to go on and risk losing *all* points from all preceding weeks quite gutsy indeed. The formula proved so successful that Prodigy, with Godin and Yoyodyne's help, recently revived the game. It's most salient feature is that it's wholly uncomplicated – players get questions, then answer them or don't. There's no intensive client-server logic to be worried about, and presumably no problem with "latency," or the time it takes for signals to travel back and forth between the customer's computer and Prodigy's servers. With a simple exchange of graphics and text, and a database to track users' responses, Prodigy and Godin created the world's most popular online game.

Web games like this persist today, only in other more dynamic forms. Electronic Arts' online game site, Pogo.com, offers many basic games, such as cards, chess, backgammon, and sports trivia. These contrast directly with the traditional bread and butter games EA produces for consoles and PCs, but they are discovering that not everyone prefers these more in-depth titles. Business at the site is booming, with more than 25 million people visiting in a single month last year, a number that is growing month by month. [74] Other companies are starting to pay attention to statistics like these; Real Networks, Inc. has begun offering games in both web and downloadable format, generally sticking to the Pogo.com template of keeping the games simple, quick, and addictive. They report unexpectedly high demand and demographics data showing that players are evenly split between male and female, and 80 percent of those people are over the age of 30. [74]

These numbers indicate that there is a solid market out there for a variety of game types, not just the console or PC games we're so familiar with from the past decade. Games like *Halo* and even *The Sims* require a fairly significant investment of time and energy, both to learn and to play, and it's conceivable that their appeal is relatively narrow because of this. In contrast, games that are simple and easy to play, especially those that resemble time-tested offline games like checkers, are much more approachable to those who didn't grow up with video games or don't have the time or money to spend on a PlayStation 2. A distinct advantage of the online games is that opponents don't need to be in the same room to play against each other. Now challengers can find competition from anywhere there is web access, expanding the talent pool and allowing everyone to find a niche in both skill and game type. It's rather like a real-time version of "chess by mail," where each player sends a move via a paper letter to an opponent.

If the sites that attract the casual gamers keep their attention for enough time, they can sell advertising space on their pages, thereby turning what appears to be a free service into an engine for generating revenue. Games are especially "sticky" when it comes to attracting and keeping eyeballs on web sites, and Pogo.com augments them by including free chat rooms, prizes for the top gamers, and a monthly newsletter. All of these elements are excellent community-building items that keep people coming back for more, thus ensuring that the advertisers remain.

Traditionally, companies that develop games find that offering them as streaming or downloadable content, but as Pogo.com and many other sites are discovering, there is money to be made from the world's casual gamers, even if the games themselves are free. Web game communities seem to be in the foothills of a viable business model that could pull even more people into computer gaming, and it will be interesting to see how these sites grow and evolve as more generations get comfortable with playing chess vertically instead of horizontally.

### **Online Arenas**

Within the context of online web communities, games seem to be just one of many elements providing the "glue" that keeps people together. Take away the games, but leave the chat rooms and monthly newsletters, and you might have fewer users, but the site would still resemble countless other online communities, with no relation to games or entertainment. But take away the web content and leave the games, and you have something else altogether – what I

like to call “online arenas.” These virtual spaces host gamers with only one thing in mind – to compete with or against each other online. These arenas encompass games like *Quake III Arena*, *Warcraft*, and *Half-Life: Counter-Strike*, both of which contain both single-player and multiplayer modes. Single-player mode amounts to the traditional gaming experience – one player fighting past numerous enemies and challenges, with the difficulty increasing on each level, until eventually the final battle ensues and the game is won (or not). Multiplayer mode, however, takes the player online to play against other gamers anywhere in the world, and the gameplay can differ significantly from the single-player experience.

Jesper Juul lists four characteristics that separate computerized games from their analog counterparts: time, automation/complexity, replay, and levels. [7] The first two refer to the computer’s functions of rapid processing and large amount of memory, both of which allow a game to do millions of calculations per second and store enough data to display compelling graphics and control lots of elements on the screen simultaneously. Where the *Dungeons & Dragons* players of the early 70’s might have had to roll dice or keep track on paper of various characters and their movements, the computer does this all effortlessly and in the background, freeing up the player to concentrate on the task at hand, such as slaying a dragon with a magic sword while the dragon’s minions attack from all sides. Such a scenario is all but impossible to quickly track without the aid of a microprocessor and RAM – the logic required to calculate the changes to the system quickly becomes too cumbersome to manage offline.

The second two characteristics are more abstract. According to Juul, the quality of *replay* is “the option of returning to the same game, both in the sense that you can go back to exactly the same challenge, play a level of the same game again, and in that you sometimes can save your position.” [7] This is obviously not possible in physical games like pinball or pachinko, which are essentially analog systems with an infinite number of possible configurations. Replayability also allows players to practice certain skills against the same conditions many times in a row, not to mention allowing several tries at a difficult problem. There are countless games in existence where in order to complete them the player must “die” many, many times, owing to the difficulty of going up against a certain enemy or the diabolical cleverness of a puzzle for which failure means death. When a player can effectively “rewind” time within the game, it is a powerful incentive to go back and try again without consequences. (As noted earlier, this raises problems with some people when it comes to violent games, since it can be seen as trivializing death and



rendering realistic events like getting shot or falling from a high point dangerously inconsequential.) The concept of the “saved game” was an important milestone in the evolution of video games.

The *levels* quality of games refers to their pattern of increasing the difficulty as the game progresses, and as the player becomes more skilled at the actions the game requires of them. Few analog games offer this kind of challenge on their own – even in chess a player whose skills are advancing the greater challenge has to come from a better human opponent. (Unless, of course, the player wants to play chess against a computer.) With careful design, a game developer can effectively guide the training of the player as she progresses, through the introduction of newer, more complicated challenges that must be passed or beaten in order to continue. The player is also commonly given more power as the game progresses, through “power-up” items like stronger weapons or better defensive capabilities. This is a wholly artificial construct that has become almost indispensable to most computer and video games. The idea that a game environment, especially one that is modeled to be “realistic,” would contain conveniently placed items that help a player in his quest is far too good to be true, yet we all accept the notion that game characters will constantly stumble onto armor that immediately increases the amount of damage they can withstand before “death.” (Undoubtedly most of the world’s armies would love for this principle to hold true during battle.) Unnatural as it may be, the notion of “levels” is another cultural contribution of computer and video games, and it has tremendous relevance to the discussion of online games.

One of Juul’s most interesting points comes when he says, “The rise of the multi player computer game, that we today consider “the new thing”, means that the computer game to some extent is going full circle and partly returning to its roots in the non-electronic by dropping replay and level progression.” [7] Which is to say that online games rely completely on the time and complexity aspects of computer games. This is treading remarkably close to the traditional concept of “virtual reality,” in which one presumes people can roam and explore imaginary environments and even meet other virtual citizens. The only difference between this sort of online experience and the “online arenas” is that the games impose a fairly strict set of rules on participants. No player enters a *Quake III Arena* server and expects to be allowed to walk around examining the walls – upon entry you are immediately a fair target for other players, who are running around carrying weapons and itching to use them. Many online arenas have evolved

their own subset of game types as well. The extremely popular game *Counter-Strike*, a modification of the computer first-person shooter *Half-Life*, is based on several scenarios where terrorists and counter-terrorists compete against each other, with the terrorists required to complete a goal such as planting a bomb, and the counter-terrorists tasked to stop them. Games of “capture the flag” are also not uncommon in online arenas, where two teams compete to bring the opposing team’s flag back to a “base” without being caught. This kind of organized play between several players can be surprisingly coordinated, just like a team of soldiers or football players – one team with good tactics and coordination between members is sure to beat an unorganized bunch. Due to the involvement of several individuals, online games such as *Counter-Strike* and Capture the Flag are not repeatable events in the same way a saved single-player game might be. Once a game has been played, it can never be replayed in exactly the same way, just like each meeting of two football teams is a unique event. Nor are there difficulty levels involved – the skills of each individual player determines how hard or easy the game turns out to be.



Figure 5: *Half-Life: Counter-Strike*, courtesy Gamers.com

To state that games are returning to their roots by dropping replay and levels could actually add credence to those who wish to have computer games recognized as a sport, such as the Cyberathletes Professional League. [75] Online games conducted with unpredictable human players or “contestants,” with the computer providing only the in-game physics and virtual terrain, are not difficult to think of as “sports” in the sense that they can be profoundly strategic

at the higher levels and they require great mental and physical skill to do well. There is resistance to calling competitive computer gaming a sport, of course, due in part to their sheer novelty and lack of physical resemblance to traditional sports such as soccer or baseball. This plays into the ongoing debate about the distinction between “sport” and “game,” in which activities that are physical but do not necessarily demand excellent physical condition are called into question as sports, i.e. golf or billiards. Without taking sides in that debate, computer games seem to differ from billiards only in the magnitude of the motions required to play them – a high-level game of *WarCraft*, for instance, might require as much or more strategy, thinking ahead, and spatial plotting than a game of professional 9-ball. If most of the activity in an online game takes place in virtual space, does that make it any less valid? One extremely interesting study would be to examine the areas of the brain that handle spatial memory and complex mapping tasks and see if they behave any differently during a game of *WarCraft* than they do during billiards. The amount of physical activity would be fairly similar overall (certainly closer than they would be between *Quake* and soccer), which would help to isolate the mental differences. I suspect that a player who is deeply involved in an online game of action or strategy would “light up” areas of the brain that are similar to those activated during physical, spatial tasks of navigation and strategy.

The suggestion that online games are a sport and should be classified as such is by no means settled, but it is being challenged every time leagues like the CPL hold tournaments and give away thousands of dollars of prize money to the winners. So far the number of people actually making a living this way is very, very small, but as the technology improves and more kids who grew up with games decide to take them seriously as a profession rather than just a hobby, we will see organized game tournaments broadcast on television and the Internet. Many of these games even have a “observer” function, whereby non-players can insert themselves into an ongoing match and “film” the action from their own perspective. The results can be replayed after the game itself has ended, which lends itself well to commentary and analysis.

Online arenas have a promising future, especially as the bandwidth of home internet connections grows beyond the slower modems and broadband access, such as DSL or cable modems, becomes the rule rather than the exception. If designers can create games with broader appeal than the first-person shooters that are so popular at the moment, they could pull in even more customers and sell more units. Typically, game companies do not charge for access to their games’ multiplayer online features, but it wouldn’t be surprising to see “premium” online



gaming spaces appear, modeled after many web sites that keep some content free, but charge for the extras. Online arenas could offer free play for single game sessions, but charge for access to an online tournament, perhaps with prizes for the winners. Cyber-sports tournaments are already garnering publicity, and now with an entire television network, G4, dedicated to computer gaming, it doesn't seem far-fetched that these tournaments will be televised live with commentary and instant replay, just like existing sporting events. [76] But while the potential of these arenas for gaming competitions is tremendous, they will always be limited by the rule-based, goal-oriented framework they impose on players. For truly unbounded play, persistent online worlds offer the most promise to gamers and simulation fans.

### **Persistent Online Worlds**

Some of the most talked-about and intriguing combinations of the Internet and games are persistent online worlds. Massive multiplayer games such as *EverQuest*, *Ultima Online*, and *Asheron's Call* offer players a complete virtual world that is active twenty-four hours a day, whether they are logged in or not. Players create characters and build them up through fighting, trading, and social interactions, and for all of this they pay a flat monthly fee plus the cost of the game software. In the past few years, as the technology has caught up with the imaginations of the games' designers, player populations have skyrocketed. Sony, which owns *EverQuest*, reports 400,000 total users, with a staggering 60,000 online at any one time. [4] That is the equivalent of a large real-life town occupying a virtual world, with each player actively participating in the social and economic systems that have been established.

The implications of these online worlds are still being fully explored and understood, but what we do know is that they reveal a good deal about the vast potential of the true online community. People are no longer restricted to message boards and HTML in these games – they are given entire personas to dress, develop, and teach new skills, and they can “wander” around the virtual landscape finding quests to embark upon or other meeting up with other players to form alliances. The social aspect is a strong attractor for many players. Virtual clans or guilds have formed in nearly every MMORPG in existence. Players quickly find their place in the hierarchy and strive to improve it, and guild leaders benefit greatly from their improved social status as well as any material donations they are owed by the guild members. A good deal of time is spent online simply talking to other players. All of this social interaction can be satisfying



for any player, but it is especially fulfilling for people who may not have many “offline friends” or are otherwise starved for social contact and validation.

Economically, the online worlds have proved to be quite a handful. When *Ultima Online* was first released, the designers sprinkled resources and gold pieces around their virtual world, thinking that basic economic laws of supply and demand would take hold. Instead of buying or trading the items, however, players hoarded them ceaselessly. They did this so persistently, regardless of the controls that the administrators put in place, that the company was forced to institute a policy of steady injection of resources. Otherwise, the world of valuable objects simply dried up and no economic activity was possible. [77]

Hoarding aside, *EverQuest* has been found to have a thriving economy. An analysis done of the game’s economic state found that hourly wages worked out to \$3.42, the GDP approached \$5 million, and the unit of money (one platinum piece) was worth about one American penny. [78] The analysis was done on both in-game bartering *and* real life transactions of virtual items within the *EQ* universe. People have actually taken items that have significant value inside the game and offered them for auction on sites like eBay.com. Sony expressly forbids this behavior, but that doesn’t prevent it from taking place. Just as in any economy where certain goods or services are outlawed, a black market has developed for *EQ* items – except that this market exists outside the game itself, in so-called “meatspace.”

The crossing of boundaries between virtual and actual worlds is a problem for MMORPGs in a number of ways, not merely economic ones. Among *EverQuest* players, the common nickname for the game is “EverCrack,” an allusion to the addictive cocaine derivative. The comparison is deliberate. Some people find the immersiveness of online worlds to be almost irresistible. The existence of another world in which they can be whomever they like, where they are rewarded simply for spending time and running around slashing at imaginary beasts, provides a compelling escape from the burden and banality of real life. The trouble comes when the virtual world takes precedence over the actual one. The problem has been documented in countless pieces – people whose spouses left them, lost their job, or even committed suicide because they spent many, many hours per week online existing as their alter egos in the game. [79, 80] Among those who are familiar with the genre, it has become almost a cliché – reviewers of the game often warn potential buyers that opening the game guarantees hours of lost sleep and quality time with loved ones, and current players relate their tales of time lost to the game as if

they were attending rehabilitation for the first time. With all of the talk about game addiction, it's an easy phenomenon to distort – note the “addiction language” that I am already using in this description, and how it relates to the demonization of computer games in general as anti-social, dangerous forces. Distortion in the other direction is also possible, of course – many die-hard *EverQuest* gamers joke about their “addiction” and pass it off as a phase or a minor inconvenience in their lives, as if the game were somehow the equivalent of the medicine a person takes to get better. In the end, getting a balanced picture of the online gaming community and their offline lives is difficult. The only clear picture that emerges from all the press is that a tremendously immersive, compelling concept was stumbled upon when the MMORPG was invented. Considering the similar effects that *Dungeons & Dragons*, the direct ancestor of these games, had on some players, it's not an altogether surprising conclusion. Role-playing in a fantasy world as immersive as this is clearly an escape many, if not most gamers find irresistible.



Figure 6: *EverQuest* screen shot, courtesy EQVault

With the success of multiplayer online games came a host of other problems as well. Designers of massive multiplayer universes found that a delicate balance was necessary in order to ensure that a game was fun without being out of control. At the 2002 Game Developers Conference, one discussion revolved around how to make such games entertaining. One popular analogy is to Disneyland, which essentially dictates that “a massively multiplayer, online world should be just like Disneyland, a ‘controlled environment,’ built for the entertainment of guests and with all unsavory elements removed...Primarily this is in response to so-called ‘grief’

players, who thrive on making the game miserable for others.” [81] The basic problem designers and developers run into is that what they are really are trying to create is a mirror of society at large, contained in computer servers and entered via the portal of the user’s home computer. Their simulation is lacking, however, in many of the checks and balances modern society has come up with over thousands of years to keep things running – an effective law enforcement body, meaningful punishments, economic regulation, and so on. Ill-behaved online players who use the imaginary world to run amok often discard even basic rules of social decency. Behaviors that are kept in check in person are let loose online, and the lack of effective consequences creates something close to digital anarchy. The “grief” players make the rest of the game miserable for everyone else – they steal, cheat, and generally find as many ways to ruin the game for others and advance their own characters as they possibly can. In real life, these players may be repressed teenagers or angry adults with a bone to pick with humanity, but in real life they wouldn’t dare behave the way they do online simply because they’d most likely be arrested in short order and sent to jail. There’s no virtual jail online, at least none that would be a deterrent – anyone who would be put in jail would simply kill their character or begin a new character, thus “escaping” to misbehave anew.

Online game designers have tried various schemes to combat these problem players. It’s a bit of a crisis of interest since, like it or not, grief players are still paying members of the community. It’s next to impossible to kick them off permanently if they are determined to get back in, yet steps need to be taken to curb their behavior since one bad apple can spoil the barrel for other, more obedient players, and they’re all paying customers as well. One measure that’s been taken in nearly all massive multiplayer online worlds is to separate characters between “player killers” and “non-player killers.” In other words, those who want to fight and murder each other get their own little corner of the world away from the other, more peaceful citizens. This way random killings of innocent players where they are not welcome are kept to an absolute minimum, and new players, or “newbies,” don’t have to worry about getting killed before they even learn how to play properly.

However, separating the violent types from everyone else still does not solve the problem of the games getting “gamed” themselves. Since the overarching goal of games like *EverQuest* is to increase “experience points,” or XP in game shorthand, there is a great deal of incentive for some players to find ways to earn points quickly. (The concept of XP is borrowed directly from



*Dungeons & Dragons*, as are many of the rules and conventions used most in MMORPGs.) For example, if the completion of a quest awards a player a valuable item, other stronger players will simply “camp” right next to the area where the item is awarded and steal it away before the player who earned it can actually collect. A few stolen items sold or traded and the thief’s overall experience increases, while the victim loses any advancement opportunities they fought for. Other exploitations have involved bugs in the games themselves – players of *Ultima Online* once discovered a bug that let them create money, which they did at an alarming rate and drove inflation rates within the game to astronomical levels. [77] It makes no difference if these XP-earning methods are illegal in the game; after all, what’s the worst that could happen? MMORPGs have tried all sorts of punishment techniques, including assigning “bounty hunters” to apprehend players marked by others as misbehavers. The problem there was that everyone was assigning the misbehavior demerits to anyone, rapidly making them meaningless. In the end, game administrators found that they usually needed to impose new rules, or change the game logic, in order to “shut off” the cheats as they are discovered. It’s an imperfect solution that takes the control outside of the game environment – a sign of our limited understanding of how to model a dynamic, equilibrated social system.

Without a doubt, the next generation of online games, such as *Asheron’s Call 2*, will attempt to address many of these shortcomings in their systems. They may get lucky and manage to solve certain problems, such as how to stop players from hoarding items, but it’s difficult to believe that we’ve reached the point where an online society can be as complex and interdependent as our actual society. What’s really holding them back is the same thing they are striving for – the amount of control they have over the players and the environment. For every action that players are allowed to do, there are countless more that are simply impossible in their game environments. It’s not a simulation of reality any more than Disneyland is, and that not only invites certain types of people to figure out ways around the limitations, it also inhibits the formation of a robust society. Until technology and game design expertise find a way to create far more unbounded virtual worlds for thousands to explore and inhabit, certain imbalances will always exist.

Not coincidentally, more control and freedom is exactly what players seem to want. In particular, players (and game designers) would love to see online environments that allow them to express themselves as individuals. This quality of customization can be seen in relatively few



games today, the most notable one being *The Sims*, which allows users to create their own character clothing and facial appearance, as well as objects like furniture that can be placed in their little sim-houses. But *The Sims* is a very different animal from massive multiplayer online games – for one, *EverQuest* is mainly about collection of the all-important experience points, while *The Sims* has no such overarching goal. MMORPG designers committed to creating the ideal Disneyland world are grappling with the question, “How can a game design rationalize the desire to give players creative power with the need for a controlled environment?” [81] The answer is far from clear-cut.

To begin with, there are lawyers – real ones, that is. When people are allowed to use their own creations within games, especially graphics, there is a distinct danger of copyright infringement. What’s to prevent a player/character from putting up a huge Mickey Mouse banner on the storefront of their virtual cheese shop to attract customers? Disney is notoriously intolerant of anyone else using their trademarked symbols – they’ve been known to scour the web and send threatening letters to any website containing Disney logos or characters. It would be a bad time for the game companies if large, deep-pocketed corporations such as Disney came knocking at their doors with “cease and desist” letters. Online gaming may be one of the few proven profit areas on the Internet, but it doesn’t hold a candle to animated movies.

Furthermore, giving players creative control over their environment invites, well...anything. If everyone is permitted to decorate virtual lawns with virtual yard gnomes and gigantic neon virtual flamingoes, things could literally get ugly in there. Not to mention any kind of displays that others might find obscene or offensive – the last thing game companies want is for a few obnoxious neighbors to drive away the rest of the community because of dirty words (or worse) plastered all over their front door. Remember, these are the same game designers who want a *lot* of control over their creations, administratively and aesthetically – this kind of free-for-all directly contradicts those desires. If it weren’t for the fact that users are clamoring for customizable features in their games, most designers wouldn’t even be considering them. But it has already gone beyond simple consideration; designers are implementing customization. In the process they’re undergoing a bit of a rough change in their philosophy. As Raph Koster, *Ultima Online* lead designer and current head of the *Star Wars Galaxies* MMORPG project, puts it, “Get over yourselves! The rest of the world is coming.” [81] It may very well be time for online game

designers to set their strict rules and design sensibilities aside when it comes to this point and give the users their freedom.

The beauty of giving users more freedom is that with every relaxation of the rules, new and unexpected consequences emerge. Many times they are bad, such as when player-killers start randomly murdering innocent citizens, but in other cases they can be, at the very least, extremely interesting. One example comes from *Ultima Online*: “No sooner was U.O. up and running than a player introduced a new line of work by operating two characters, one named Jenny and the other Pimp Daddy.” [77] There’s a name for this phenomenon, *emergence*, and it refers to the appearance of complex behaviors from system guided only by simple, localized rules. An ant colony is one of the classic examples of this principle at work (though if you look, examples are everywhere): each ant possesses only the barest of intelligence, but through pheromone signals and behavior cues they manage to coordinate their activities to build labyrinthine homes, locate and gather food, and perpetuate their species by taking care of immature offspring. There is no central control mechanism – the queen is in fact dependent upon her colony to survive, and only provides more ants. The rest of the work is done via a magnificently choreographed routine that is not really choreographed at all – it is simply emergent, as a result of all the individual ants acting following their naturally embedded rules of behavior. [3]

Any system can exhibit signs of emergent properties, but the best and most successful examples are ones where central control is non-existent and the system is allowed to self-organize and find a state of equilibrium without interference. Obviously, online communities are a long way from reaching this goal – they are still stuck on the idea of having total control over their games. Could they ever relax that control enough to allow players to solve the games’ problems for themselves? To their credit, they are actively exploring this possibility. One game columnist and former *Ultima Online* employee says, “‘We’re building games with too many moving parts!...Hideously complex games that are impossible to balance.” [81] In other words, make games simpler and ultimately, after some more growing pains, they will be more flexible and rewarding for everyone. Executing on that statement is probably even more difficult than developing the current crop of games was – which is to say, incredibly difficult. There’s also the concern of profitability. As noted in Chapter 2, this is cutthroat industry with little margin for error. Major mistakes aren’t rewarded with more money for development, so if an “experimental” game flops, there are no real second chances for that development team.

Once again, it's *The Sims* that is pointed out as leading the way for online games everywhere. Even though the game isn't online itself (yet), its underlying principles are the first step toward the creation of a virtual environment that encourages free exploration, player self-expression, and emergent behavior, all without relinquishing control over what makes it entertaining. The Minskian "frames" that were mentioned in Chapter 3 are also small, semi-autonomous actors within the greater picture – every sim-object, whether it's a human or a dishwasher or a hamster, interacts with every other object according to a set of rules. The only central control in the game is the player herself, and even then the sims have "free will" that lets them do as they wish when left on their own. Watching a sim-family walk around the house, bumping into each other on their way to the bathroom, you can almost believe that they have little minds in there and are plotting what to do next. Sure, human players are necessary to maintain equilibrium in the game; if they weren't, it wouldn't be a game at all, really, just a self-sustaining simulation. In fact if we revisit our attempt at a definition of games, we find that *The Sims* doesn't really fit any of them. It lacks any state of "winning," per se; players can play forever, accumulating money and property as long as they like. In this respect, *The Sims* really is more of an interactive simulation.

The emergence that is exhibited by massive multiplayer online games is far closer to that which is seen in everyday human society, since humans are the societal units rather than any computer-generated artificial intelligence. This is the primary reason online game worlds aren't self-sustaining yet – we don't even understand all of the intricacies of our offline society, so we are unable to model them in a virtual environment. The day will come when the first self-sustaining online society is realized, and games like *EverQuest* will have had a significant role in its evolution. Not only is this an unavoidable reality, it's another compelling reason that computer games are more than just entertaining time-wasters.

## Conclusion

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It's tempting to look back, from *Spacewar!* to *The Sims*, and claim loudly that video and computer games have made quantum leaps in technology and design since they were first invented over forty years ago. Too bad it isn't true. The games of today are still nearly identical to their ancestors in design, interactivity, and purpose; and the underlying technology, while impressive, is mostly just more of what already existed twenty years ago. Some of the most important explorations that games allow us to undertake are just now being touched upon. Bigger, better online worlds, fully functional virtual societies, and legitimate cyberathletic competitions, among other things, will mark the second chapter of game history, one that will be regarded as the moment when games came into their own culturally.

What will it take then to push games to this next level? The best place to look is in the game development community, since their current ideas provide the best window we have into where the upcoming games are headed. Developers at GDC 2002 pointed the way in their discussions about the future of MMORPGs. There have been a lot of suggestions about how they could be improved and given broader appeal. One distinct area for improvement would be to standardize the platforms games are run on. PCs, while eminently useful, are unreliable, require too many coordinated components to function well, and often must have the very best of all the hardware in order to play the most up-to-date games. This discourages developers from building advanced games with prohibitive hardware requirements, because in doing so they limit their target audience and consequently their potential profit. The future of gaming lies in selling consumers pre-configured, unchangeable hardware that is optimized for game-playing and remains constant so developers don't have to try and guess what sort of hardware their users will be loading their games onto. This proprietary hardware already exists, of course, in the form of the game console. Microsoft's Xbox is the best example of the direction the industry is headed. They lured game developers to their console by basing it on their existing operating system technologies, Windows and DirectX, as well as making the hardware mostly off-the-shelf parts



to keep costs down and eliminate component incompatibility. If this trend is any indication, the personal computer hardware market has split into two sectors: general-purpose and game-specific. The possibility exists that developers will not see business sense in developing simultaneously for both platforms, most likely leaving the PC on the trailing edge of games.

When it comes to arcades, the conventional wisdom that they are dying is only partially true. Arcades as we know them are certainly passé – no more dark smoky bars or dirty shops with broken down machines. The arcade owners know that to compete with home gaming they have to produce a spectacle, which is exactly what we're seeing in the newest generation of entertainment complexes. Video games are being combined with physical rides at parks like Universal Studios and Disneyworld, and smaller installations like Sega's GameWorks are creating their own brand of virtual reality with "Hollywood-style special effects" and "enclosed full-motion simulators." [21] The marriage of electrical engineering, amusement parks, and computerized graphics holds a great deal of potential for entertainment as well as simulation.

When it comes to the design of the games themselves, the conclusions of the moment can be summed up as simplicity, accessibility, and convenience. Today's game spectrum is too bipolar; the choice of good games is generally between the very small and simple and the very large and complex. Small and simple is popular, as Pogo.com has proven, but the large and complex is where the true profits are located. Designers at GDC 2002 discussed ways to keep games easy to play without sacrificing the immersive complexity of worlds like *EverQuest* or *The Sims*. [81] Even as everyone's schedule grows longer and busier, even children's, games like these require the investment of a significant amount of time. Playing some titles is better compared with baking a cake than with watching TV - there is a process to follow, a progression of events, which takes time to develop and is unrewarding to quit in the middle. Designers want to find a way to keep games compelling without requiring this kind of time investment, and to that end they are considering giving players multiple portals into the games themselves. Clearly we are inundated with more electronic devices than just our PCs these days – why shouldn't cell phones and PDA's, or even email, also be access points into an ongoing online game? Also along the lines of maximum reward for minimal time investment is the idea of giving players more options while they are in the games. With MMORPGs, it's easy enough to come up with the ideas – just let the players do what they would like to do in real life, such as start musical groups, elect officials, or organize major events. The point is that each player would put as much of

themselves into the game as they could afford, and get back an equal amount if not more for their efforts. This kind of reward strategy is a bit foreign to the current crop of games, where more time spent means more points earned and more status in the eyes of other players.

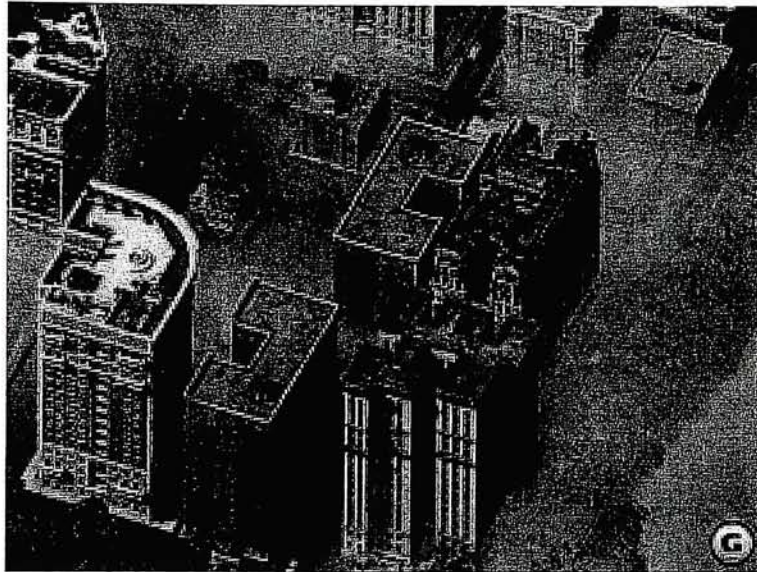


Figure 7: *SimCity 4* from Maxis, courtesy GameSpot.com

The folks at Maxis are also pushing the boundaries with two upcoming releases – *SimCity 4* and *The Sims Online*. The former is a from-scratch redesign of their groundbreaking *SimCity* series, with improvements such as building on uneven terrain and day-night cycles that affect the activity level of the city (see Figure 7, above). [82] The graphics, already strikingly similar to a bird's-eye view of urban landscapes, will become even more realistic with the addition of clouds, fog, and other weather formations. Perhaps *SimCity 4* will find a place in education as part of a lesson in dynamic systems or city planning. Without a doubt it will find a place on my own hard drive, and I say that without a trace of shame or sheepishness.

*The Sims Online* has even more potential than its predecessor, due to the unbelievable potential of networking a collection of sim-communities. The game, which will most likely be released in late 2002, could very well resemble “the ultimate chat program,” according to creator Will Wright. [83] Online communities containing thousands of players apiece will actually be cities unto themselves, each with different terrain and surrounding environment. Players will not only get to invent themselves, but they'll also be able to build businesses catering to the needs of the community, such as a restaurants or specialty stores (see Figure 8, below). Just like *EverQuest* and *Ultima Online*, *The Sims Online* will have a complete virtual economy, based on



the game's currency, the "Simoleon." The likelihood of emergent behavior in a game this ambitious is essentially guaranteed; in fact, Wright seems to be counting on it when he says, "'It'll probably end up like Disneyland where the players are building the rides.'" [83] Just like chat rooms and web communities, *The Sims Online* will probably fragment into multiple groups people with similar interests, and elaborate social structures and business ventures will appear unbidden.

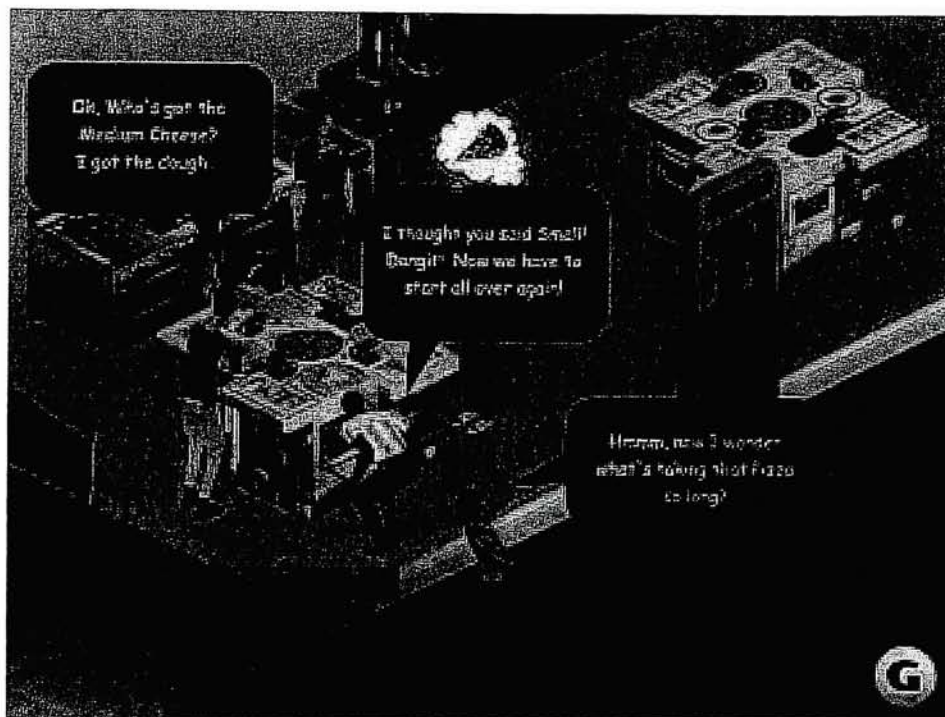


Figure 8: *The Sims Online*, courtesy Gamespot.com

Even more exciting than thinking about the online possibilities of *The Sims* is thinking about the potential for offline crossover features. What if, for example, a player wanted to send her virtual neighbor sim-flowers as a sign of affection or thanks? What if that same flower order were set up to be delivered to an offline vendor as well, which would then deliver them to the recipient's real address the next day? Behavior like this would have to be strictly controlled, of course, to prevent any negative or retaliatory actions – perhaps the recipient would have to indicate a certain level of trust in the flower-giver before such an order could be placed – but the community would be all the richer if such interaction were possible. Adding voice-chat capabilities to the on-screen chatting would also make things interesting – players could conduct “virtual” phone calls or conversations that would actually be the equivalent of an Internet telephone call (or “voice over IP” for those familiar with the technology). The beauty of

modeling the virtual *Sims* world on the actual is that there is no shortage of imaginative new features one could dream up. If Will Wright and Maxis execute *The Sims Online* properly, and there's no reason to believe they won't, it could one day be christened the first true self-regulating online society.

The field of computer games is simply too diverse to adequately cover everything in a single thesis, and I certainly did not manage to integrate all the sources I collected. Much more could be said about games versus the cinema, such as a comparison of cinematic techniques and their effectiveness in the medium of interactive games. Television was barely mentioned, but the juxtaposition of console games onto television sets is certainly the beginning of the nebulous "interactive TV" that has been on the verge of reality for what seems like an eternity. I only scratched the surface of virtual reality, another technology that has received much more hype than actual commercial success, but an interesting exploration would be to compare the original visions of virtual reality with the emerging MMORPG worlds, or with the first-person experience of *Quake III: Arena*. From an educational standpoint there is much more literature out there about games and their value to teachers, and without a doubt an entire thesis could be written on effective methods of integrating them into the curricula of many traditional academic subjects. Also, as I alluded to in the section on Addiction in Chapter 3, there is a whole spectrum of neuropsychological experiments that could be conducted pertaining to the areas of the brain excited by playing computer games, and how these compare with the areas that are active during offline tasks.

Games are just now on the verge of being recognized as a culturally important phenomenon worthy of careful study. While they are still primarily entertainment, human ingenuity in the form of advanced technology and software design has allowed them to transcend the realm of basic fun and hint at deeper, more satisfying experience. At the same time, games are informing other recognized disciplines such as movies and literature owing to their unique interactive qualities. As the field of ludology comes into its own, perhaps one day the discipline will find its own *magister ludi* worthy of comparison to Freud or Frye – except this time prowess with a joystick will be a required credential.



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