

# **Pioneering Computer Toys**

**- A New Way to Play -**

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**STS145: History of Computer Game Design**

**Winter 2004**

## Introduction

In the late 1980's, personal computer games were a small but growing sector perched between the entertainment and software industries. Games up to this point had all been straightforward, with clear roles and goals for the players, metrics by which to judge success, and scripted or de-facto endings. However, with the introduction of SimCity in 1987, and its surge of popularity and the releases of similar games in the following years, a new genre was introduced to the computer gaming world. Lacking clear objectives, scripted play, absolute success or failure, and any endings at all, these games were better described as “*computer toys*” – virtual sandboxes in which players can build cities, planets, creatures, and empires, all seemingly alive on the screen. The story of these programs is indeed interesting: not all computer toys proved successful, they often appealed to uncharted demographics in and out of the gaming world, they inspire radically different styles of play, they've been used in education, and they've inspired debate. Here will be explored the nature of computer toys, the how's and why's behind their successes and failures, and their places in and out of the gaming world.

## History

In the mid-1980's, Will Wright was a Macintosh software developer working on a game—in the more established genre of flight combat simulation—in which a helicopter bombed a group of islands. However, “while designing a ‘terrain editor’ to create the landscape, he discovered that he had more fun building the islands than bombing them.”<sup>1</sup> Combining this notion with the “urban planning theories of an MIT professor named Jay Forrester”<sup>2</sup> led Wright to conceive SimCity, an open-ended simulator for planning and building a working virtual city. Computer simulation models had been used in educational urban planning “games” in the 1960's, but with little success – and Richard Duke, the pioneer who had introduced them, had since become “deeply skeptical” about their use.<sup>1</sup> Wright, unable to find an established software company willing to take a risk on such a program as a consumer game, joined with businessman Jeff Braun to found

Maxis Software in 1987.<sup>2</sup> SimCity was first released to lackluster sales, but word of mouth and some high-profile media coverage soon boosted its reputation and its sales. The game would go on to win numerous awards and top best-seller lists for years, selling over six million copies by the year 2000. SimCity and its sequels “stayed popular for more than a decade in an industry where most titles fade after a few months.”<sup>3</sup>

In addition to its own success, the game and its philosophy founded an entire genre of open-ended and flexible simulations – other computer toys – in its wake. Wright continued making “Sim” games at Maxis, including SimEarth, SimLife, SimAnt, SimHealth, and others throughout the 1990’s; the company also teamed with Russian company Animatek to create the genetics playground (and eye-candy) computer toy, El-Fish. Though none of these titles sold as well as the original, direct sequels of SimCity (Simcity 2000, 3000, and now 4) have topped gaming charts.<sup>3</sup> Through the 1990’s Sid Meier created the Railroad Tycoon and Civilization simulations, which both bore strong resemblance to the Sim series, after being inspired by Wright’s work. The Sims, a computer toy simulating the lives of individual citizens of the SimCities, is currently the best-selling computer game of all time.<sup>4</sup> Countless other games taking cues from SimCity and its progeny have come and gone in the last 15 years.

## **Computer “Toys”**

It’s a simple observation to make: walk through the toy section of any store, and see how toys lend themselves to play. Are they “scripted?” Do toys come with goals to reach, metrics of success, or a built-in end to their play? No – an army man, a Barbie doll, or a car are all toys that suggest, if anything, only a setting and vague roles. The player is free to construct any scenario, defining his own goals, setbacks, and criteria for success. Some of the most successful toys ever – Legos, Lincoln Logs, and Erector Sets – are almost *completely* blank slates for the players’ imaginations.

However, computer games had found themselves in a narrative rut in the late 1980’s: if a player tries to deviate from the script, according to Will Wright, “the game just rejects it. So I can see how someone could get very attuned to that, not expecting to

be able to bring in their own imagination.”<sup>5</sup> Wright, however, saw the potential of a computer to become a super-toy – one that would play *back* in ways that physical toys simply couldn’t – while keeping the imagination-friendliness of physical toys. Therefore, just as physical toys act as representations of an imagined scenario, used to inspire the imagination, Wright claims that his software is “really just a tool to spark the model in your head; the game supplies the dynamics, but it’s your head that fills in the details. There’s a space between the computer model and the brain’s model where this thing actually lives.”<sup>5</sup> That SimCity and its offspring have been called the most cerebral games ever made is probably correct – rather than deciphering the intentions of a programmer’s story, here the player is constructing one of his own.

### **How They’re Played (With)**

The aspect of computer toys that most gamers were unprepared for – and happily surprised by – is the lack of a definite goal. Broderbund, the software company initially tapped for distribution of SimCity, was not so willing to bet on this philosophy:

*When Wright tried to sell the game to Broderbund, the company opted not to publish the title because it wasn't enough of a game. So, in an attempt to save it, he put in some scenarios with specific victory conditions. Ironically, very few gamers ever played the scenarios. Everyone seemed to prefer creating their own problems and either solving them or invoking Armageddon via natural disasters.*<sup>6</sup>

Thus, players of SimCity are free to “decide their own victory criteria,” developing both “utopias and industrial wastelands.”<sup>7</sup> Likewise, SimEarth offers sentient species, boiling oceans, and almost everything in between. In SimLife one can find a perfect life balance or a valuable education about various types of ecological imbalances – it need not be limited, as one reviewer was, to a “payoff” as “a successful ecosystem with custom-designed creatures.”<sup>8</sup> In this respect, the *game* in which any player engages is not the

programmer's creation, but the player's – the player merely uses the programmer's *toy* as a representation for, and participant in, the game.

However, the dynamicism of the simulation gives it a behavior of its own, defined by the toy's invisible underlying rules. This makes the player's game (or story, or art) more responsive and “alive” for the player, who never has complete control of his creation. As Barry Atkins puts it, “we do not read to find out what is written next,” since the player cannot fully *write* his story alone; rather, we read and play “to find out what *happens* next.”<sup>9</sup> The player creates the game; the toy plays the game with the player. This gives rise to a tremendous sense of ownership and satisfaction in computer toy play that is generally denied the players of other genres.

### **Games of Life – Hidden Rules**

In *The Game of Life*, perhaps best described as a mathematical toy, John Conway created a simple set of rules that gave rise to fascinating patterns two-dimensional checkerboard over multiple iterations – suggesting the complexity of systems, like life itself, that can spring from very simple principles.<sup>10</sup> Twenty years later, *SimCity* and other computer toys bear a strong resemblance to this pioneering work; after all, simulation games are “almost nothing but a collection of formulae given graphical representation on screen.”<sup>11</sup> Will Wright's own description of his software shows their striking similarity to *The Game of Life*:

*The one thing that all the Sim games really emphasize more than anything else is the shape of chaos. You can have what seems like a fairly simple system, but even a few simple things interacting can lead to wildly unpredictable behaviour.*<sup>12</sup>

However, *The Game of Life* and modern simulation toys are actually reverses of one another – in the former, the equation is known and the patterns remain to be found, while in the latter the patterns utilized are the only clues to the unknown underlying formulae.

Therefore, for the most meticulous scientifically-minded player, the explicit self-imposed goal in a simulation game may be to reverse-engineer the entire product,

discovering quantitatively just how a city, a planet, or a lifeform actually *works* – that is, according to the game designer. In fact, whether or not this is an explicit goal, it is a human instinct to internalize the underlying rules of any situation – though this often takes the form of “intuition” or “gut feeling” rather than conscious number-crunching.<sup>13</sup> One real-life mayor who played SimCity observed that the simulated residents of his digital city were “a highly predictable bunch following standard demographic profiles. After a few rounds, you'll begin to learn exactly how they'll react to your mayoral decisions.”<sup>14</sup> With the benefit of having internalized real-life city dynamics over the years, SimCity's simplifications were an easy modification to his instincts! Of course, this assumes that the simulation has done a reasonably accurate job of quantifying often mysterious real-life situations – but Will Wright believes, and has successfully written into many best-selling computer toys, that even happiness can be mathematically modeled.<sup>15</sup>

In this analysis of simulation games as the creation of patterns to discover rules, we may understand the different levels of success achieved by different simulation games. SimCity, Civilization, Railroad Tycoon, and The Sims are four of the most popular computer toys – or even computer games – of all time. SimEarth, SimLife, SimAnt, and El-Fish were less successful. Notice that the successful group has entirely to do with entities that were formed, over time, by the human mind: cities, civilizations, railroad enterprises, and suburban life. In playing these computer toys, the same kinds of human brains that created these real-life phenomena are now challenged to internalize a simplified set of rules for them – it's no wonder that this should be intuitive and satisfying for the player! Conversely, the less successful products are concerned with natural rather than man-made systems: ecology, evolution, planetary physics, and ant colony behavior. These can be satisfying, as serious players have found – however, for the average player, the learning curve and mindset shift form formidable barriers.

## Broader Appeal

In introducing a new style of computer entertainment, these toys also drew new demographic sectors to gaming. Computer toys tend to be gender-neutral, an aspect which has actually been more successful with potential female players than the so-called “pink” games that deliberately play into gender stereotypes.<sup>16</sup> Even though on the surface “SimCity embraces stock themes from boys’ play, such as building forts, shaping earth with toy trucks, or damming creeks,”<sup>17</sup> the open-ended play allows the expression of any desirable end-goal. One account of husband-and-wife players shows that the husband created an ideal downtown with the perfect underground service configuration and complete infrastructure, while the wife created a town of artistic beauty whose suburban paradises would be ideal for quiet family life. However, their differences run even more deeply: the husband played his game to be “a satisfyingly complex engineering problem, reinforcing his habitual sense of competence,” while for the wife “it was a narrative, in which the little parades and cheers of her contented townsfolk were the most memorable dramatic events.”<sup>18</sup> This enables computer toys to reach not just across gender lines, but across the largest or smallest preferences of each individual player.

Simulation computer toys have also found an audience in education. Many subjects covered by these simulations are taught in curricula from first grade to college, and the dryness of raw equations can certainly be boosted by dynamic graphical representations that encourage experiments and explorations. As mentioned previously, some computer toys failed commercially for being based on less intuitive base concepts – but if the educational goal is to *make* those concepts intuitive, then the likes of SimEarth and SimLife are excellent tools. A number of educational resources exist that guide educators in this pursuit.<sup>19</sup> However, perhaps the most valuable lesson remains what one such resource warns: “Remember that the simulations are a simplified, artificial representation and students should be encouraged to identify the differences between the simulation and the real world.”<sup>20</sup>

## **Finite Possibilities**

The words “infinite” and “unlimited” are often found in the advertising copy of many computer toys, but while there may be an uncountable number of paths to take in any player-defined game, there are inherent limitations imposed by the toy’s designers. SimCity’s unchangeable adherence to American-style capitalism,<sup>21</sup> SimEarth’s “noticeable bias against nuclear energy,”<sup>22</sup> and even SimLife’s assumption of sexual, genetic, and evolutionary rules, are all examples of the often subconscious subversion of true freedom in these toys. More astute reviewers have expressed concern over the limits of these simulation models, especially when used in an educational setting. After all, SimCity is not capable of showing a city as “a social work of art, ...a community formed around a shared conception of the common good.”<sup>23</sup> Even more shocking, the designers can slyly impose their own political ideologies on players: “Did a conservative or a liberal determine the response to changes in tax rates in SimCity?” asks one reviewer, in one of his many complaints of biases built into the software.<sup>24</sup> Perhaps most noticeable in SimCity is the complete absence of race among the virtual population, which may successfully avoid the controversy Wright feared, but also removes the highs and lows of racial diversity and race issues present in any real-life city.<sup>25</sup> Overall, players of these simulations should actively strive to be aware of the differences, limitations, and simplifications that have been built into the software, and resist letting them mar their understanding of the real-life situations being caricatured on-screen.

## **Conclusion**

Computer toys have connected with, expanded, intrigued, and delighted the computer gaming community for 15 years. However, their origination was not an obvious step in game design – the concept didn’t appear until after more than a decade of computer game design, and it was disbelieved and resisted by many, including those

controlling the funding and distribution resources, when it did come about. Even now, simulations and computer toys have yet to reach their full potential for educational, imagination-exercise, artistic, and community-building purposes. Perhaps more distressing is the limited view that we maintain of computer gaming – if computer toys released us from one mental constraint in the 1990's, what other preset notions remain that must be broken to allow the next great advance in this medium? A retrospective look at past revolutions in the gaming world, and how they developed and changed how we see computers, may be the best clue to the next one to come. There are profits to be made, imaginations to be inspired, and minds to expand with this medium, and we are all responsible for bringing it to its full potential.

Body Word Count: 2488

## Notes

- 1 Starr, Paul. 1994. "Seductions of Sim: Policy as a Simulation Game." *The American Prospect* (Spring) p19-29. Available here: <http://www.prospect.org/print/V5/17/starr-p.html>
- 2 Keighley, Geoff. No date. "SIM-ply Divine: The Story of Maxis Software." *GameSpot.com* Available here: <http://www.gamespot.com/features/maxis/>
- 3 For a brief history of the Sim series and the other games it inspired, see:  
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[http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1\\_EAIM\\_0\\_A54501577&dyn=8!xrn\\_23\\_0\\_A54501577?sw\\_aep=stan90222](http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1_EAIM_0_A54501577&dyn=8!xrn_23_0_A54501577?sw_aep=stan90222)
- 4 The Sims took the title from another genre-creating game, the graphical adventure and puzzle game *Myst*:  
Walker, Trey. 22 March 2002. "The Sims Overtakes *Myst*." *GameSpot.com* Available here:  
[http://www.gamespot.com/pc/strategy/sims/news\\_2857556.html](http://www.gamespot.com/pc/strategy/sims/news_2857556.html)
- 5 No author. May 2000. "Good Will Gaming – An Interview With Gaming’s Great Constructor, Will Wright." *Computer Gaming World* p64. Available here:  
[http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1\\_EAIM\\_0\\_A60369808&dyn=47!xrn\\_8\\_0\\_A60369808?sw\\_aep=stan90222](http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1_EAIM_0_A60369808&dyn=47!xrn_8_0_A60369808?sw_aep=stan90222)
- 6 No author. Oct 1997. "SimCity – Software Review." *Computer Gaming World*, n159, p350. Available here:  
[http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1\\_EAIM\\_0\\_A19755950&dyn=8!xrn\\_32\\_0\\_A19755950?sw\\_aep=stan90222](http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1_EAIM_0_A19755950&dyn=8!xrn_32_0_A19755950?sw_aep=stan90222)
- 7 Wilson, Johnny L. 1 March 2001. "Strategy Classics." *Computer Gaming World*, p70.
- 8 Keizer, Greg. Jan 1993. "Simlife: life goes on and on and on." *Omni*, v15, n4, p12. Available here :  
[http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1\\_EAIM\\_0\\_A13304884&dyn=18!xrn\\_87\\_0\\_A13304884?sw\\_aep=stan90222](http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1_EAIM_0_A13304884&dyn=18!xrn_87_0_A13304884?sw_aep=stan90222)
- 9 An excellent discussion of the narrative elements of games is provided by Barry Atkins. His interpretation of the narratives in open-ended simulation games is particularly astute:  
Atkins, Barry. *More than a game: The computer game as fictional form*. Manchester: Manchester University Press, 2003. p121.
- 10 For a thorough description of *The Game of Life*, written before its practical use with computers, see: Gardner, Martin. Oct 1970. "Mathematical Games: The fantastical combinations of John Conway’s new solitaire game ‘life.’" *Scientific American*, v223, p120-3. Available here:  
[http://ddi.cs.uni-potsdam.de/HyFISCH/Produzieren/lis\\_projekt/proj\\_gamelife/ConwayScientificAmerican.htm](http://ddi.cs.uni-potsdam.de/HyFISCH/Produzieren/lis_projekt/proj_gamelife/ConwayScientificAmerican.htm)
- 11 Atkins, Barry. *More than a game: The computer game as fictional form*. Manchester: Manchester University Press, 2003. p115.
- 12 McLean-Foreman, John. 1 May 2001. "An Interview with Will Wright." *Gamasutra.com*. Available here: [http://www.gamasutra.com/features/20010501/wright\\_01.htm](http://www.gamasutra.com/features/20010501/wright_01.htm)

- 13 An excellent discussion of the hidden lessons, theories, and equations found in any simulation game is provided here by Ted Friedman, a student of the cultural history of personal computers: Friedman, Ted. 5 Apr 1999. "Semiotics of SimCity." *First Monday*, v4, n4. Available here: [http://www.firstmonday.dk/issues/issue4\\_4/friedman/](http://www.firstmonday.dk/issues/issue4_4/friedman/)
- 14 J.E. Clark, second-term Mayor of Portland, Oregon:  
Clark, J.E. Apr 1990. "Key to the city." *PC/Computing*, v3, n4, p145-7. Available here: [http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1\\_EAIM\\_0\\_A8250144&dyn=18!xrn\\_98\\_0\\_A8250144?sw\\_aep=stan90222](http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1_EAIM_0_A8250144&dyn=18!xrn_98_0_A8250144?sw_aep=stan90222)
- 15 Pogash, Carol. 28 May 2001. "His Life as a Petri Dish." *Forbes*, v167, i13, p12. Available here: [http://web4.infotrac.galegroup.com/itw/infomark/808/756/48344546w4/purl=rc1\\_EAIM\\_0\\_A74494521&dyn=47!xrn\\_7\\_0\\_A74494521?sw\\_aep=stan90222](http://web4.infotrac.galegroup.com/itw/infomark/808/756/48344546w4/purl=rc1_EAIM_0_A74494521&dyn=47!xrn_7_0_A74494521?sw_aep=stan90222)
- 16 A brief overview of women in gaming – or why there are so far, so few:  
Case, Stevie. 12 Jan 2004. "Women in Gaming." Microsoft.com. Available here : <http://www.microsoft.com/windowsxp/games/learnmore/womeningames.asp>
- 17 Jenkins, Henry. "Complete Freedom of Movement: Video Games as Gendered Play Spaces." Page 262-297 in *From Barbie to Mortal Kombat: Gender and Computer Games*. Eds. Justine Cassell and Henry Jenkins. Cambridge: MIT Press, 1998. Available here: <http://web.mit.edu/21fms/www/faculty/henry3/pub/complete.html>
- 18 Murray, Janet H. *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. New York: Free Press, 1997. p88
- 19 An educational resource compiled by and for teachers, using SimEarth, SimLife, and SimCity, among other simulations, is available at <http://www.mcli.dist.maricopa.edu/proj/sw/games/> A narrative description of the use of SimCity in a classroom situation is available in the resource below:  
Coburn, Janet. Sept 1997. "The Social (Studies) Side of Technology." *Technology & Learning*, v18, n2, p36-42. Available here: [http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1\\_EAIM\\_0\\_A19798705&dyn=8!xrn\\_34\\_0\\_A19798705?sw\\_aep=stan90222](http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1_EAIM_0_A19798705&dyn=8!xrn_34_0_A19798705?sw_aep=stan90222)
- 20 Website: "Shall We Teach with a Game?" <http://www.mcli.dist.maricopa.edu/proj/sw/games/>
- 21 For some particularly intriguing scenarios that simply are not possible in SimCity – much to the dismay of their author, and probably members of these real-life cultures or economies – see:  
Atkins, Barry. *More than a game: The computer game as fictional form*. Manchester: Manchester University Press, 2003. p130.
- 22 For more scientific arguments against the assumptions of Sim games, see:  
Elmer-Dewitt, Philip. 24 Dec 1990. "The day I played God: creating a new world is complicated – and risky." *Time*, v136, n27, p74-5. Available here: [http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1\\_EAIM\\_0\\_A9222650&dyn=25!xrn\\_17\\_0\\_A9222650?sw\\_aep=stan90222](http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1_EAIM_0_A9222650&dyn=25!xrn_17_0_A9222650?sw_aep=stan90222)
- 23 More aspects of the City, as it exists as an entity, an art form, and a social construction – and how SimCity can not achieve these in its current form – are available at:  
Kolson, Kenneth. Mar 1996. "The politics of 'SimCity.'" *PS: Policial Science & Politics*, v29, n1, p43-7. Available here: [http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1\\_EAIM\\_0\\_A18541038&dyn=14!xrn\\_43\\_0\\_A18541038?sw\\_aep=stan90222](http://web4.infotrac.galegroup.com/itw/infomark/809/756/48344546w4/purl=rc1_EAIM_0_A18541038&dyn=14!xrn_43_0_A18541038?sw_aep=stan90222)
- 24 The politics of SimCity alone could make for an excellent paper – see Paul Starr's critique here:

- Starr, Paul. 1994. "Seductions of Sim: Policy as a Simulation Game." *The American Prospect* (Spring) p19-29. Available here: <http://www.prospect.org/print/V5/17/starr-p.html>
- 25 Kolson, Kenneth. Mar 1996. "The politics of 'SimCity.'" *PS: Political Science & Politics*, v29, n1, p43-7. Available here:  
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- "Good Will Gaming – An Interview With Gaming's Great Constructor, Will Wright." No author listed. May 2000. Computer Gaming World p64. Available here:  
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