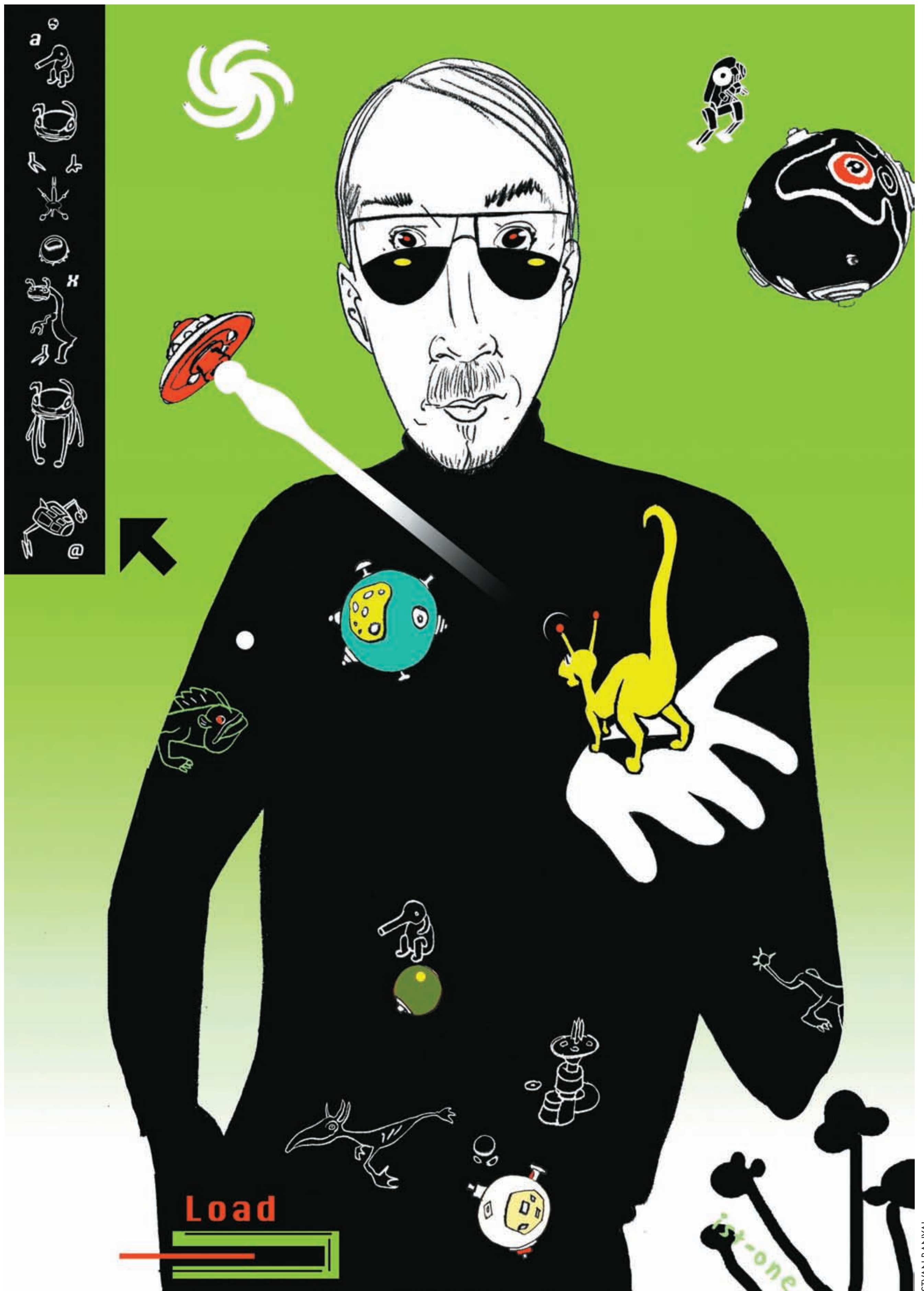

ISTVAN BANYAI

PROFILES

GAME MASTER

Will Wright changed the concept of video games with the Sims. Can he do it again with Spore?

BY JOHN SEABROOK

In 1972, an engineer and former carnival barker named Nolan Bushnell started a video-game company, in Santa Clara, California. As an engineering student at the University of Utah in the nineteen-sixties, Bushnell had become obsessed with an early computer game called Spacewar. The game's developers, a group of graduate students who were part of the Tech Model Railroad Club, at M.I.T., an early proving ground of computer hackers, had never considered selling the game; their idea was to demonstrate the appeal of interactivity, and to take a first small step toward simulating intelligent life on a computer. Bushnell's ambition was more worldly. He wanted to manufacture coin-operated game-playing machines and license them to amusement arcades. He foresaw a new kind of midway hustle, in which the hustler would be inside the machine. "The things I had learned about getting you to spend a quarter on me in one of my midway games," he later said, "I put those sales pitches in my automated box." From this unlikely marriage—the computer lab and the carnival—the video-game industry was born.

The first product of Bushnell's company, Atari, was Pong, a simple, elegant game in which two players manipulated electronic paddles and sent a blip back and forth across a black-and-white screen. The game had two basic components. It was a simulation of table tennis, managing to render most of the game's rules, structure, and logic onto the screen. And it was an animation—a moving picture designed to complete the feedback loop between the eyes, the brain, and the fingers on the game controls. The game was designed by a former All-State football player named Al Alcorn, who was Atari's second employee. As Heather Chaplin and Aaron Ruby tell the story in "Smartbomb," their recently published history of the industry, Bushnell took the handmade Pong game to Andy Capp's Tavern, in nearby Sunnyvale, and within weeks people were lining up outside the bar in the morning, before opening time, to play it. By 1974, Pong had made it to a pizza parlor in Hanover, New Hampshire, where I played it, and for the rest of that summer my dearest desire was to go back and play it again.

The games that followed Pong—Space Invaders, Asteroids, Missile Command, and Pac-Man, among others—were even more captivating, but the simulations remained the stuff of arcades and midways: sports, space aliens, zombies, shoot-'em-ups. In the nineteen-eighties, as the speed and storage capacity of computers and game-playing consoles grew, designers continued to improve the graphics. The simulation side of the games, however, never came close to realizing the Tech Model Railroad Club's old ambition of reproducing real-life dynamics on the screen. The best-selling video game this year is Madden NFL, in which you get to play pro football from the perspective of star players. Madden NFL is a far more sophisticated simulation than Pong was, but the content of the game is no closer to real life.

In the late nineteen-eighties, a new type of video game quietly emerged—the God game. Computer animation is a brute-force project of converting graphic art into two-dimensional pixels, and, more recently, into three-dimensional polygons, the building blocks of digital pictures. But to create a truly absorbing simulation, one that offers some insight into the nature of real life, is a much more difficult proposition. The designer must play God, or at least the notion of God in Boethius' "Consolation of Philosophy"—a god that can anticipate the outcome of the player's actions and yet allows the player the feeling of free will.

Among the pioneers of the God game was Peter Molyneux, of Great Britain, who created Populous, in 1989. The game gives the player omniscient power over a variety of simulated societies. (You can help them or torture them as you wish, although your actions have consequences in the game.) Another important God-game designer, Sid Meier, has based his Civilization series, which began to appear in 1991, on historical processes, such as scientific discovery, war, and diplomacy. But the master of the genre—the god of God games—is Will Wright. Beginning in 1989, with SimCity, in which the object is to design and manage a modern city, and continuing with The Sims, in 2000, in which you care for a family in an ordinary suburban environment, Wright created situations that redefined the boundaries of what a game can be. "It occurred to me that most books and movies tend to be about realistic situations," he has said. "Why shouldn't games be?" To game designers, Wright is the Zola of the form: the man who moved the subject matter of games away from myth, fantasy, and violence and toward ordinary social life.

For the past six years, Wright has been working on a new game, which will be released in 2007. It is anticipated with something like the interest with which writers in Paris in the early twenties awaited Joyce's "Ulysses." At first, Wright called the project Sim Everything, but a few years ago he settled on the name Spore. The game draws on the theory of natural selection. It seeks to replicate algorithmically the conditions by which evolution works, and render the process as a game. Conceptually, Spore is radical: at a time when most game makers are offering ever more dazzling graphics and

Wright is betting that players want to create stories and environments—that what they really like is exploring "possibility space."

scenarios and stories, Wright and his backer, Electronic Arts, are betting that players want to create the environments and stories themselves—that what players really like about games is exploring what Wright calls "possibility space." "Will has a reality-distortion field around him," his former business partner, Jeff Braun, told me. "He comes up with the craziest idea you've ever heard, and when he's finished explaining it to you the world looks crazy—he's the only sane person in it."

Wright's office is in a corner of a six-story building a few blocks from San Francisco Bay, in Emeryville, California. It has a balcony where he can smoke. The walls are covered with drawings in colored markers, which bear cryptic messages like "Star Map Issues." Wright, who is forty-six, is tall and skinny, with a long, narrow face and slender fingers. He dresses in more or less the same clothes every day—black New Balance sneakers, faded black jeans, a button-down shirt, a leather jacket, and thick aviator-style glasses. His skin is shiny and reddish-brown, in that way that a smoker's skin can look—half tanned and half cured. He sometimes has a wispy mustache and goatee. You don't really have a conversation with him; you mention an idea, and that triggers five or ten associations in Wright's mind, which he delivers in quick bursts of data that are strung together with "um"s.

When I walked into his office, Wright jumped up and, after shaking my hand, said, "Here, try this, um, it's this really cool toy I found recently," and handed me a wireless controller for a small robotic tank that was sitting on the floor. It was facing another tank, which Wright was controlling. He started moving his tank around and shooting mine, watching me curiously, waiting to see how long it would take me to understand what was going on. I felt an odd tingling sensation in my hands, but I didn't pay any attention to it at first. Eventually, I realized that I was getting shocked: every time Wright's tank shot mine, an electric charge passed from the controller into my hands.

Wright had been working on a PowerPoint presentation of a talk he had been asked to give about Spore. "It's supposed to be about how I came up with the game, but what I really want to talk about is the history of astrobiology, so I'm doing both," he said. He moved over to the two computers in his office and clicked through some images, while describing the basic structure of Spore. At first, I was baffled. Up to this point in his career, Wright has been including more and more social realism in his games. But Spore is a surprise—at a glance, it looks like a "cartoony bug game," as one contributor to a gaming Web site put it. The buildings don't have the crisp urban lines of SimCity; they look more like the architecture in Dr. Seuss books. Wright has also introduced weapons and conquest. The violence isn't gratuitous—in some cases, you have to kill to survive—but it isn't sugar-coated, either. Not only do you kill other creatures in Spore but you have to eat them.

At the first level of the game, you are a single-celled organism in a drop of water, which is represented on the screen as a two-dimensional environment, like a slide under a microscope. By successfully avoiding predators, which are represented as different-colored cells, you get to reproduce, and that earns you DNA points (a double helix appears over your character). DNA is the currency in the early levels of Spore, and as you evolve you can acquire better parts—larger flippers for faster swimming, say, or sharper claws for defeating predators. Eventually, you emerge from the water onto the second level—dry land—and your creature must compete with other creatures, and mate with those of your own kind which the computer generates, until you form a tribe. You can play a violent game of conquest over other tribes or you can play a social game of conciliation. If you make clever choices, according to the logic of the simulation, you will survive and continue to evolve. Along the way, you get to acquire ever more powerful tools and weapons, and to create dwellings, towns, cities. When your city has conquered the other cities in your world, you can build a spaceship and launch into space. By the final level, you have evolved into an intergalactic god who can travel throughout the universe conducting interplanetary diplomacy and warfare.

The images that Wright called up on the computer were supposed to illustrate the game, but they gave little sense of what it would look like. There was a slide that showed the equation for gravity, a slide about panspermia theory (the idea that life on earth began with organic matter brought from space by comets and other "dirty snowballs"), and a picture of the cast of the early-eighties TV show "The Dukes of Hazzard." Wright paused to say that, according to his calculations, based on the speed of radio waves, a hundred and fifty stars have received "The Dukes of Hazzard" by now.

Spore isn't a multiplayer game, like the immensely popular World of Warcraft, which runs on "massively parallel" computers (a distributed system employing many networked machines); it's what Wright jokingly calls a massively parallel single-player game. If you enable an Internet feature, Spore servers will "pollinate" your copy of the game with content created by other players. In order to create the best content for your style of play—"the right kind of ecosystem for your creature," as Wright puts it—Spore builds a model of how you play the game, and searches for other players' content that fits that model. If you create a hyper-aggressive Darwinian monster, for example, the game might download equally cutthroat opponents to test you. In other words, while you are playing the game, the game is playing you.

Wright asked if I would like to try the Spore "creature editor," which is the first major design tool in the game. On the screen was a kidney-shaped blob that looked like Mr. Potato Head before you add the features. Wright showed me the menus for creating my creature's skeleton, body, eyes, and skin. I used the mouse to stretch the blob into a torso, changing the shape and length of the spine as I did so. I chose the parts from the left side of the screen—flippers, beaks, three-jointed legs—all of which would cost DNA points at this stage of the game. Wright explained, "You can choose different mouths—carnivore, herbivore, omnivore—which will determine not only how you will eat in the world but what type of voice the creature has." On the right side of the screen were graphics that showed the evolutionary advantages and consequences of each choice—speed, power, stealth, etc. Switching to the paint menu, I applied a base coat of purple, then some orange

stripes; the computer automatically shaded the colors, so that my creature's skin looked professionally textured.

"O.K., now go to test mode," Wright said.

I clicked a button and my creature sprang to life and started lumbering around the screen. It was a goofy-looking thing—a hammer-fisted apatosaurus with a potbelly, a long neck, and floppy dog ears. But it was a fully animated character, something that Pixar might have created, and I had made it in about three minutes. I felt as if I were playing with digital clay.

Electronic Arts is the largest producer of video games in the world, with more than seven thousand employees, and studios in North America, Europe, and Asia. It makes or licenses software for many game-playing platforms, including computer games for P.C.s and Macs; console games for Nintendo, Sony, and Microsoft game boxes; handheld games for the Nintendo Game Boy (and the new Nintendo DS) and for the Sony PSP; and online games for playing on the Web. Most recently, E.A. has begun to make "mobile games," for playing on cell phones, a new and rapidly growing market.

E.A. was founded in 1982 by Trip Hawkins, a former marketing manager at Apple Computer, as "the new Hollywood," and it was at first supposed to be a haven for video-game auteurs. Hawkins proposed to treat designers, who had hitherto been regarded as mere engineers, as artists, and to design sexy packaging that would evoke album covers, with the names of the creators emblazoned on the front. "Can a video game make you cry?" was one of the company's early challenges. Over the years, E.A. shifted its strategy toward games based on "proven content"—licensed stories and characters from film, sports, and TV, rendered in game form. (More recently, it has focussed on creating its own intellectual property.) E.A. has also developed sports-simulation games, based on professional sports leagues, featuring the players themselves. As Steven L. Kent recounts in "The Ultimate History of Video Games," it began in 1984, with Dr. J and Larry Bird Go One-on-One, a basketball game for which E.A. paid Erving and Bird to use their names and images. Since then, E.A. has created a sports-gaming empire. The latest version of Madden NFL, which was originally published in 1990, sold two million copies in its first week of release this August. In recent years, the company has acquired a Microsoft-like reputation for hard-nosed business practices—buying smaller development studios that can no longer afford the rising costs of game production, and shutting out potential competitors with exclusive licensing deals.

The E.A. campus is in Redwood Shores, California, at the northern edge of Silicon Valley. Employees dress in shorts; there's a gym; the games in the company store are less than half price; and several meeting rooms are designed to look like sports bars. But, according to two class-action suits for "unpaid overtime," one filed by E.A. game artists and another by programmers, working for E.A. hasn't always been as much fun as it appears to be. Although both suits have been settled and E.A. has revised its overtime policy, during crunch times eighty-hour weeks continue to be the norm.

While I was at E.A., I was given a demonstration of The Godfather, one of the company's new games. You begin as a low-level criminal and attempt to become, through the clever use of violence and extortion, the head of the crime family. One of the game's innovations is that, in addition to killing opponents, you can also wound them by shooting them in the kneecaps or shoulders—and if you only wound them you can still extort money from them, and thereby advance in the game. I also saw the latest installment of the Tiger Woods golf franchise. The golfer allowed E.A. to attach motion sensors to his body and face, and the data were rendered in computer graphics. The result is, among other things, a remarkable computer-animated version of Woods's famous smile—the way the upper lip slides up over the teeth is perfect. After hitting a good drive, you get to hear Woods whisper, "On the screws, Tiger."

After the demos, I met Larry Probst, the fifty-six-year-old chief executive of E.A., who started in the company's sales department in 1984. Probst explained that E.A. allowed Wright to put together a development team by choosing some of the most talented artists and programmers from E.A.'s vast network of game makers. The company also constructed a separate headquarters for the seventy-five-member team in Emeryville, about fifty miles north of the corporate campus, near Orinda, where Wright was living. It was counting on Spore to help shore up its bottom line. The company's stock price had dropped

"Stampeding off a metaphoric cliff—and you?"

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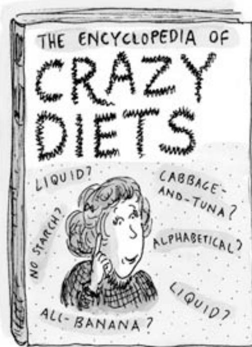

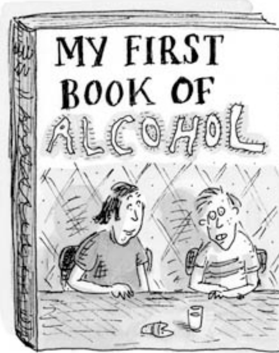

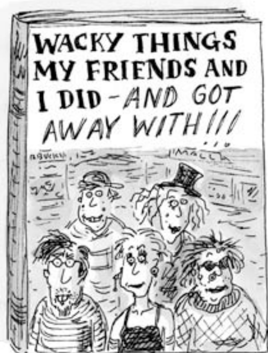

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almost thirty per cent since April, and its sales figures were twenty per cent lower than last year's. Probst blamed the company's problems on one of the cyclical downturns that hits the game industry every four or five years, when a new generation of gaming machines become available; this fall, both the PlayStation 3, from Sony, and Nintendo's Wii system go on sale. Traditionally, gamers stop buying the current generation of games in anticipation of those which will be developed for the new machines.

But there are reasons to believe that E.A.'s problems are more systemic—indeed, that the entire game industry is on the verge of a fundamental restructuring. Not since the early nineteen-eighties, when video games began moving from amusement arcades into homes, has the future seemed so uncertain. While each generation of hardware offers the capacity for increasingly realistic graphics—like Tiger's smile—it also requires producers to devote more programming hours to filling that capacity. Twenty years ago, it was possible for one man to create an entire video game; today, development teams of a hundred or more are the norm. Moreover, E.A.'s basic product, which is a boxed game costing around fifty dollars, isn't as appealing as it once was. Many adult players prefer "casual games," which can be played on cell phones and in shorter sessions online. Instead of buying games at a store and bringing them home, customers want games they can get on the Web. Just as some in the film industry have begun to wonder about the economic feasibility of films that cost upward of fifty million dollars to produce, so people in the game industry wonder whether big-budget games can survive in a climate that favors downloadable games that are cheap, short-lived, and disposable.

During our conversation, Probst seemed most enthusiastic about the market for casual games, especially games for cell phones, which earned E.A. more than a hundred million dollars last year. "Think about what happens when three billion Chinese people have cell phones," he said at one point. But how do you convince a casual gamer, who is just looking for distraction, to play a game that is about evolution, city building, conquest, and interstellar travel? I asked Probst about this, and he said, "You tell people it's a Will Wright game."

Wright belongs to the last generation of game designers (and, indeed, human beings) who grew up before personal computers and game consoles existed. He built models of things as a kid: "ships, cars, planes—I loved to do that," he told me. When Will was ten, he built a balsa-wood replica of the flight deck on the Enterprise, which won an award at a Star Trek convention. He was also fond of the board games made by Avalon Hill, such as PanzerBlitz, a strategy game loosely based on tank warfare on the Eastern Front.

Wright's father, Will, Sr., and grandfather were graduates of Georgia Tech's engineering school, and Wright keeps their graduation pictures hanging on a wall in his house, alongside a picture of himself. His forebears are crewcut men in sober suits, about to embark on successful careers in making useful things. Then, there's Will, Jr., who never graduated from college, and who didn't fit into the family tradition—a gangly man-boy with a sweet, slightly stoned-looking grin. "Something went wrong with this one," Wright said, peering at the picture.

In the nineteen-sixties, Wright's father developed a new way of making plastic packing materials and started a successful company, which allowed the Wrights to live comfortably in Atlanta. Will's dad was also an excellent golfer. His mother, Beverlye Wright Edwards, was an amateur magician and actress. Wright flourished in the local Montessori school, with its emphasis on creativity, problem solving, and self-motivation. "Montessori taught me the joy of discovery," Wright told me. "It showed you can become interested in pretty complex theories, like Pythagorean theory, say, by playing with blocks. It's all about learn-

ing on your terms, rather than a teacher explaining stuff to you. SimCity comes right out of Montessori—if you give people this model for building cities, they will abstract from it principles of urban design."

In the evening, Will and his father would sit on the porch and talk about the stars, NASA's Apollo program, and the possibility of life on other planets. Wright was planning to be an astronaut, and his goal was to create colonies in space that would help relieve the pressure of overpopulation. His father thought this was a wonderful idea.

When Will was nine, his father died of leukemia, and his mother took him and his younger sister, Whitney, back to Baton Rouge, her home town. Will went to Episcopal, a conventional prep school. He didn't like it as much as the Montessori school, although he enjoyed discussions about God with the faculty. "That's where I became an atheist," he said. He started at Louisiana State University when he was sixteen; two years later, he transferred to Louisiana Tech. He excelled only in subjects that he was interested in: architecture, economics, mechanical engineering, military history. He had impractical goals—in addition to starting colonies in space, he wanted to build robots. He dropped out again after two years, drove a bulldozer for a summer, and then, in the fall of 1980, went to the New School, in Manhattan, where he studied robotics. He lived in an apartment over Balducci's, in Greenwich Village, and spent a lot of time on Canal Street scrounging parts from the surplus electronics stores that used to line the street and using them to build a robotic arm.

In the summer of 1980, Wright answered an ad in a car magazine: Richard Doherty, a rally enthusiast, was looking for participants to compete in a point-to-point race between Farmingdale, Long Island, and Redondo Beach, California. Wright had a Mazda RX-7, which he and Doherty modified with a larger fuel tank and a roll cage. They wore night-vision goggles so that they could drive fast in the dark without headlights and avoid the cops. "Will said we should take the southern route, even though it was longer, because if we got stopped he'd be able to talk to the cops," Doherty told me. "We did get stopped in Georgia. We were doing a hundred and twenty, with no headlights, but it didn't take Will more than a couple of minutes to make the officer see why he had to let us go without a ticket." They won the race, establishing a new record of thirty-four hours and nine minutes.

After a year at the New School, Wright went back to Baton Rouge to live with his best friend. His family expected Will to take over the plastics company, but Will wasn't interested. (Eventually, they sold the business.) Souping up cars for rally racing was his main passion that summer, until his roommate's sister, Joell Jones, came to Baton Rouge for a visit. Jones was eleven years older than Wright; their families had been friends and he had known her when he was a teen-ager. Now she lived in Oakland, where she was a painter and a social activist. She was back in Baton Rouge to recuperate after severing a nerve in her wrist. To extend the range of motion in her hand, Wright built a device out of metal and rubber bands. "Will would talk to me passionately about the need to colonize space, and I would say that it was more important to feed people on earth," Jones told me. "Somehow we fell in love." When Jones went back to Oakland, Wright asked if he could come and live with her; she agreed, on the condition that he didn't interfere with her painting. They married in 1984.

In the early nineteen-eighties, coin-operated machines began to decline in popularity and home-video games began to take hold. Atari, which had popularized home-gaming consoles, was superseded by Nintendo, a venerable Japanese playing-card company, with its Nintendo Entertainment System. As hardware, the N.E.S. was an improvement over the Atari machines (Atari's joystick controller was replaced with the directional "+" pad, which the player operated with his thumbs), but it was software, in the form of a Nintendo game cartridge called Super Mario Bros., that made Nintendo the industry leader. Shigeru Miyamoto, who had designed Nintendo's Donkey Kong for arcades, redesigned the game, changing the carpenter in the game, whose name was Jumpman, to a plumber, whom he called Mario, and adding a brother named Luigi and a far greater array of aids (golden coins, magic mushrooms), obstacles (fire-spitting enemies), and underground passageways, many of them drawn from Miyamoto's boyhood memories of exploring caves in the mountains near his home in Sonobe.

By the time Super Mario appeared, the syntax for game play was firmly established; it remains the standard grammar today. The player progresses through the game by defeating antagonists, restoring his energy with "power-ups" he finds along the way, accumulating bonus points to rise to progressively harder levels, many of which feature a "boss" who must be defeated in order to earn a "save game" and not have to repeat the level. Although Super Mario, which débuted in the United States in 1985, had a goal (to rescue Princess Peach from a giant reptile named Bowser), it also encouraged exploration for its own sake; in this regard, it was less like a competitive game than a "software toy"—a concept that influenced Will Wright's notion of possibility space. "The breadth and the scope of the game really blew me away," Wright told me. "It was made out of these simple elements, and it worked according to simple rules, but it added up to this very complex design."

In the late nineties, Sony's PlayStation console replaced the N.E.S. as the dominant home game-playing system, and Microsoft's Xbox, introduced in 2001, is now the second-best-selling machine. But neither Sony nor Microsoft has had Nintendo's influence on basic game design.

In 1991, yet another phase in the game business began when a young programmer named John Carmack, who was, together with John Romero, a partner in a Dallas-based company called id Software, figured out how to program 3-D graphics for a P.C., enabling the designers to give more depth to interior spaces and to create more realistic movements. According to "Masters of

Doom," David Kushner's 2003 book, when Romero first saw Carmack's 3-D program, he exclaimed, "This is it. We're gone!" Romero designed the graphics and game play for an ultra-violent game, which called on his own love of nineteen-fifties horror comics published by Evergreen, combined with a heavy-metal sensibility. The result was Doom, the defining first-person shooter, in which you play a "space marine," and the object is to kill the zombies that come at you as you advance deeper into Hell. Everything about the game was designed to inflame a teen-age boy's fantasies of power while causing grave distress to his parents. In 1999, the elders' worst fears about the antisocial effects of first-person shooters seemed to be realized when Dylan Klebold and Eric Harris, the teenagers who massacred twelve of their classmates and one teacher at Columbine High School, in Colorado, were revealed to be obsessive players of Doom. Congressional hearings on violence in video games followed. More recently, the San Andreas version of the Grand Theft Auto series, in which the object is to pimp and steal your way to the top (you can get power-ups from mugging prostitutes), caused Hillary Clinton to co-sponsor the Family Entertainment Protection Act, which would ban the sale of violent games to minors. Clinton also accused the makers of violent and sexually explicit games of "stealing the innocence of our children and making the difficult job of being a parent even harder."

One day in his office, Wright showed me an e-mail he had received from Lara M. Brown, a professor of political science at California State University, Channel Islands, in response to an essay he had written for *Wired* about the educational value of video games. Brown, who uses technology in her own teaching, wrote, "Most of us are in agreement that this younger generation—raised on video games—has learned to be reactive, instead of active, and worse, they have lost their imaginative abilities and creativity because the games provide all of the images, sounds, and possible outcomes for them. Our students tend to not know how to initiate questions, formulate hypotheses, or lead off a debate because they like to wait to see what 'comes at them.' They also have difficulty imagining worlds (places and/or historical times) unless you (as a professor) can provide them with a picture and a sound to go along with the words. . . . In essence, they seem to have lost the ability to visualize with their minds."

Wright, though, believes that video games teach you how to learn; what needs to change is the way children are taught. "The problem with our education system is we've taken this kind of narrow, reductionist, Aristotelian approach to what learning is," he told me. "It's not designed for experimenting with complex systems and navigating your way through them in an intuitive way, which is what games teach. It's not really designed for failure, which is also something games teach. I mean, I think that failure is a better teacher than success. Trial and error, reverse-engineering stuff in your mind—all the ways that kids interact with games—that's the kind of thinking schools should be teaching. And I would argue that as the world becomes more complex, and as outcomes become less about success or failure, games are better at preparing you. The education system is going to realize this sooner or later. It's starting. Teachers are entering the system who grew up playing games. They're going to want to engage with the kids using games."

"I'd just like to congratulate you on how skillfully you've hidden my novel!"

Shortly after moving in with Jones, Wright began making a helicopter simulator on his personal computer (a Commodore 64). Eventually, the simulator evolved into a shoot-'em-up in which the player flies the helicopter over various cities and islands, trying to bomb buildings and blow up bridges. Wright showed the game to Gary and Doug Carlston, the founders of Broderbund, one of the earliest P.C.-gaming software companies. In 1984, Broderbund brought it out as a P.C. game called Raid on Bungling Bay, and it appeared as a Nintendo cartridge the following year. It was only a moderate success for the P.C., but it sold a million cartridges, mainly in Japan, and because of Nintendo's generous royalty agreement with Broderbund, Wright says, "I made enough money to live on for several years."

In designing Raid on Bungling Bay, Wright noticed that he "was more interested in creating the buildings on the islands than in blowing them up." He started thinking of a game in which the point would be to design buildings, or, maybe, to build a city. A neighbor sug-

gested that Wright take a look at a 1969 book called "Urban Dynamics," by Jay Wright Forrester, an M.I.T. professor, which argued that urban planning could be carried out more rationally by a computer simulation than by humans, because the computer wouldn't be blinded by intuitive biases. In a later book, "World Dynamics," Forrester laid out his proposal for a simulation that could manage the entire planet.

Computer simulations had been around since the nineteen-fifties, when military planners, climatologists, and economic forecasters began programming models of particular scenarios and dynamics, and using them to predict outcomes. One early and well-known biological simulation was the Game of Life, created by a mathematician named John Horton Conway, in 1970. The game, which simulated the growth and death of a living creature, was based on the principle of "cellular automata," in which the programmer assigns simple rules to discrete units, or cells. It can be played on a plain two-dimensional grid, in which black squares represent live cells and white squares represent dead ones. Each cell reacts to the state of the cells around it. The rules are: (1) any live cell with fewer than two live neighbors dies of loneliness; (2) any live cell with more than three neighbors dies of overcrowding; (3) any live cell with two or three neighbors lives; (4) any dead cell with three neighbors returns to life. Conway's purpose was to show how a simple structure of cells could be organized algorithmically to simulate complex, lifelike systems in which unpredictable or "emergent" outcomes occur.

Wright figured out how to combine Forrester's and Conway's ideas to imitate the dynamics of a city. The player would be responsible for adjusting around a hundred variables in a way that allows the city to thrive. You establish transportation networks, power grids, hospitals, and schools. Each decision affects many other variables: a rising crime rate leads to a declining population, which erodes the tax base, which requires the cutting of some essential services—less funding for the hospital, for example.

Wright built a prototype of the game and worked on it for Broderbund, but the company could not see the commercial potential for a game you couldn't win. Eventually, Broderbund gave back the game's rights to Wright, and he set out to find a backer.

"It's a virulent form of voter disgust."

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One night, at a pizza party in Alameda, Wright met Jeff Braun, a young businessman who was looking to get into video games. As Braun explained, "Will showed me the game and he said, 'No one likes it, because you can't win.' But I thought it was great. I foresaw an audience of megalomaniacs who want to control the world." Together, they founded Maxis, and brought out SimCity in 1989. (Broderbund eventually joined the venture as a distributor; by then Wright had added a feature that allowed players to destroy their cities with various disasters—a volcano, an earthquake, an alien attack, a meteorite shower.)

SimCity was slow to catch on, but seventeen years later the game has earned the company two hundred and thirty million dollars. A sizable number of players who first became interested in urban design as a result of the game have gone on to become architects and designers, making SimCity arguably the single most influential work of urban-design theory ever created.

In 1986, Wright and Jones had a daughter, Cassidy, and Jones made Wright promise to share the parenting equally so that she could continue painting. "He really did stick to that," she told me. "He spent a lot of time with Cassidy." While he was at home with his daughter, Wright began to turn over the idea for a new game, a kind of interactive doll house that adults would like as much as children. "I went around my house looking at all my objects, asking myself, 'What's the least number of motives or needs that would justify all this crap in my house?' There should be some reason for everything in my house. What's the reason?"

One morning in 1991, as Wright awoke in his house in the Oakland Hills, he thought he smelled smoke and called 911. Over the next half hour, the smoke got worse. "I thought, Uh-oh, this isn't trending well." He and his wife decided it was time to evacuate (Cassidy was away at a friend's house). They grabbed some family photos, jumped into Jones's car, and drove away. When they returned, three days later, the Oakland Hills firestorm had destroyed everything. Nothing was left except for some lumps of melted metal, the remains of their other car. In the months that followed, as Wright went about replacing his belongings, he started thinking about all the things people needed. "I hate to shop," he said, "and I was forced to buy all these things, from toothpaste, utensils, and socks up to furniture."

Three works helped Wright under-

stand how he could turn these life experiences into a game. One was the book "A Pattern Language," by Christopher Alexander and his colleagues at the Center for Environmental Structure, in Berkeley. The book identifies two hundred and fifty-three timeless ways of building, which are classified as patterns—"Stair Seats," "Children's Realm," etc.—and it shows how these patterns can create satisfying living spaces. The idea is that the value of architecture can be measured by the happiness of the people who live in it. The second was the psychologist Abraham Maslow's 1943 paper "A Theory of Human Motivation," in which Maslow described a pyramid-shaped hierarchy of human needs, with "Physiological" at the bottom, and above it "Safety," "Love," "Esteem," and, at the top, "Self-actualization." The third inspiration was Charles Hampden-Turner's "Maps of the Mind," which compares more than fifty theories about how the mind works. Putting these works together, Wright formulated a model with which to "score" the happiness of the people in his doll house by their status, popularity, and success, and by the quality of the environment the player designs for them—the more comfortable the house, the happier the people. Wright told me, "I don't believe any one theory of human psychology is correct. The Sims just ended up being a mishmash of stuff that worked in the game."

From a technical perspective, Wright's singular achievement in The Sims was to design a new kind of "object-oriented" operating system that modelled the complexity of social dynamics. As Chris Hecker, one of the developers on the Spore team, explained to me, "In Will's games, the objects themselves are encoded to interact with the environment around them. So if you introduce an espresso machine you buy from the online Sims mall, the Sims will be able to make espresso without having to reprogram the game. All you have to do is drop the object into the environment and it will make other stuff happen. The objects create 'verbs,' as we say."

The original Sims had eight motives or needs—hunger, hygiene, bladder, comfort, energy, social, fun, and room—all of which are affected by objects in the world around them. Life for a Sim is the pursuit of happiness, but happiness depends on social interaction and consumption, and consumption requires money. For example, the cheapest bed in The Sims 2, which costs three hundred "simoleons," brings your Sim one point of comfort and two points of energy; a three-thousand-simoleon bed carries seven points of comfort and six of energy. Wright has said that he intended the game as a parody of consumerism, because "if you sit there and build a big mansion that's all full of stuff, without cheating, you realize that all these objects end up sucking up all your time, when they had been promising to save you time."

Almost no dedicated Sims player, Wright included, actually follows the rules of the game, which force you to spend many hours working in menial jobs in order to be able to afford nicer stuff. Most players use the "cheats" that are widely available on the Internet and have been built into the game by the programmers. Cheats are short pieces of code you can type into the game that let you get around the rules. Typing "motherlode" into The Sims 2, for example, endows your Sims with fifty thousand simoleons. But using cheats doesn't really feel like cheating, because playing The Sims doesn't really feel like a game. It seems more like gardening, or fixing up your house. One of the game's small triumphs is to make work seem like fun. As my fourteen-year-old niece exclaimed recently, when I asked her what she liked about playing The Sims, "You've got one Sim who you've got to get to school, and another who needs to get to his job, and their kid has been up all night and is in a bad mood, and the house is dirty—I mean, there's a ton of things to do!"

When Wright took his idea to the Maxis board of directors, Jeff Braun says, "The board looked at The Sims and said, 'What is this? He wants to do an interactive doll house? The guy is out of his mind.' " Doll houses were for girls, and girls didn't play video games. Maxis gave little support or financing for the game. Electronic Arts, which bought Maxis in 1997, was more enthusiastic. (Wright received seventeen million dollars in E.A. stock for his share of the company.) Wright's games are so different from E.A.'s other releases that it was hard to imagine the two being united in the same enterprise. But the success of SimCity had already established Sim as a strong brand, and E.A., which by then, fifteen years after its founding, was becoming a Procter & Gamble-style brand-man-

FIRST DAYS BACK AT WORK

If I can pannier
a pinhead's worth of pollen
back to the desk—

If like the emperor penguin
I could lay
one egg,
warm its delicate
surprises on
my toes—

Such nimble kneaders, my fingers
used to be.
Will the loaf still rise?

I strain
like an old tug
hauling copses of logs.

—*Elise Partridge*

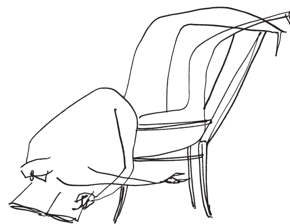
agement company, foresaw the possibility of building a Sim franchise. Released in 2000, The Sims was an immediate hit; it went on to become the best-selling P.C. game of all time. E.A. has since licensed it to many other playing platforms, and issues regular Sims "expansion packs," featuring new content, like Livin' Large, House Party, and Hot Date. (Wright worked on The Sims 2, which was a major redesign, but he has had nothing to do with the expansion packs.) The Sims franchise has earned E.A. more than a billion dollars so far. E.A.'s only misstep was The Sims Online, the multiplayer version released in 2002, which failed to attract the masses of players drawn to other multiplayer games, such as World of Warcraft and Runescape.

The Sims brought a huge new population to gaming—girls. That did not come as a complete surprise to Wright, since women made up forty per cent of his Sims development team, and his daughter Cassidy, then fourteen years old, had helped him tinker with the prototypes. When he was a kid, Wright told me, "I never played with dolls, which is more of a social thing than playing with trains—it's about the people in the house. Cassidy helped me see that. She and her friends got into the purely creative side of the game, rather than the goal-oriented side, which really influenced me a lot." Cassidy was traumatized to discover that the Sims could burn down their house, and die in the fire, if they weren't careful around the stove. Wright left that feature in the game.

An unintended result of The Sims' success is that Wright transformed the tactile experience of playing with dolls, which has been a part of children's development for thousands of years, into a virtual experience. The enormous success of The Sims means that children today can grow up without having the hands-on model-making experiences that Wright enjoyed as a child, and that inspired him to make games in the first place.

One evening, I went with Wright to the house he and Jones moved into after the Oakland Hills fire. He drove a black two-door BMW with a fancy radar detector. The car was a mess, inside and out; Wright never washes it, because he wants it to look like one of the banged-up starships in "Star Wars." Parking it in the garage, he led me into the house through a short hallway that was full of oddly shaped pieces of machined steel. Wright explained that these were left over from the days when he competed in gladiatorial robot contests called BattleBots, in which engineers attempt to build the most destructive remote-control robot vehicles possible. These ferocious machines fight in large Plexiglas boxes, ramming into each other at high speeds, trying to disable their opponents by flipping them over; the tournaments are like geek cockfights. One of Wright's robots, which he designed with the help of Cassidy, was called Kitty Puff Puff. It fought its opponents (which had names like the Eviscerator and Death Machine) by sticking a piece of gauze to its opponent's armature, and then driving in circles around it, until the opposing robot was so cocooned in gauze that it couldn't move. Eventually, the organizers banned cocooning.

The house, a split-level, was on a hilltop in Orinda, and it had a lovely view of Mt. Diablo in the distance. Jones's paintings—colorful, biomorphic abstractions—were hung on the walls, and in the yard were her sculptures: architectural-looking objects made of found metal. But Wright's stuff took up most of the space. Just inside the front door was the control console of a Soyuz 23 spacecraft, from the nineteen-seventies, which Wright bought from a former State Department official. Upstairs was his collection of unusual insects. Cassidy was away at college, but her prints—whimsical collages that feature drawings of rabbits and electric sockets—were also on display, and I saw a comic book she made, "The Adventures of Not Asian Girl." On a porch off the living room were large blocks of alabaster that Wright was in the process of sculpting with hand tools into smooth, Brancusi-like shapes, a hobby that Jones had suggested to her husband as a way of expressing his artistic side. The rock dust and overflowing ashtrays on the porch suggested that he had been devoting a considerable amount of time to grinding stone lately.



The house was also filled with books. Some are what Wright calls "landmarks"—foundations for the design of one or another of his games. "Most of the games I've done were inspired by books," he told me. SimEarth, a simulation of the earth's ecology, was based on the Gaia hypothesis of James Lovelock, and SimAnt, an ant-colony simulation, was based on E. O. Wilson's "The Ants." The key landmarks for Spore, however, were not books. They were Drake's equation and "The Powers of Ten." The former, which he'd shown me on the computer screen in his office, is a formula devised in 1961 by Frank Drake, a radio astronomer, to estimate the number of possible worlds in our galaxy that might be populated with beings that could communicate with us. (About ten thousand, according to Drake's calculations.) The latter is a short film by Charles and Ray Eames, made in 1977, which begins with a man lying on the grass in a Chicago park, and then shows a series of images of the same shot, each taken from a position ten times farther away than the last one, until the viewer reaches the limits of the universe at 10^{24} meters (ten to the twenty-fourth power). Then it returns to the opening image and goes the other way, zooming into the man's skin, until at 10^{-16} you reach the limits of the inner world—the space inside a proton.

"I love 'The Powers of Ten,'" Wright said, "and I've always been a big fan of the Eameses. At the same time, I am really interested in the terms of Drake's equation, and when I began working on Spore I was using it to map some of the game play. At some point I realized that the terms of Drake's equation mapped neatly to the scale of 'The Powers of Ten.' So I rolled the two up into Spore."

Wright seems to be more interested in making games than he is in integrating his ideas into a coherent philosophy. After you have played The Sims long enough, for example, you begin to recognize all the ways in which the simulation is not like real life. (The Sims 2, which came out in 2004, added more refinements to the basic design; in addition to the motives and needs, there are four

different aspirations.) The Sims is only as realistic as the social theories it's based on, and these theories have been combined not according to scientific principles but for the purposes of entertainment. The Sims doesn't really model human dynamics; it merely gives you a model for exploring your own idea about how families work (just as playing with dolls does). Wright is not a visionary, in the sense that he is not the author of a world view; he tailors his ideas according to the technical parameters of the simulation and the logic of games. Whether the game involves fighting intergalactic battles or modelling climate change, the simulation works according to a logic of its own. Wright may be the game industry's greatest auteur, but to a large extent he has abdicated authorship of his own creation.

Jones came home with some Mexican takeout, and we ate from the containers, in the living room. Jones is soft-spoken, but she had a quiet authority around the house. She seemed a bit subdued. I asked her if she played her husband's games. "No, I don't. I'm not really interested in games," she said pleasantly. Later, she added, "Our daughter Cass used to say, 'We lived through the process of making the games, so we don't need to play them.' I think it frustrates Will that I don't play his games. Clearly, his games matter, on a deep level, to many people—take these online diaries people keep about their Sims. Wow. I don't know if they're avoiding their lives or learning about them. Me, I don't want to play a game to learn about myself." Several months later, when I heard that Wright and Jones were thinking about separating, and Wright had moved out, I recalled Jones's words.

I asked Wright if he was working on a new game. He said that, for the first time in his career, he was not. He was researching the Soviet space program, and hoping to produce a documentary film about it. He said he was seriously considering a return to rally racing this November by competing in the Baja 1000—a race across the desert. (He later changed his mind.) He has a Hollywood agent and a TV development deal with ABC for a reality show exploring our relationship with technology in the home. But tonight, at least, he did not seem particularly engaged by any of these plans. With the prospect of Spore's launch ahead of him, he seemed a little lost.

In May, I joined some twenty thousand members of the game industry—developers, marketers, distributors, buyers, press—in downtown Los Angeles for the industry's big trade show, Electronic Entertainment Expo, or E3. Electronic Arts, which had hoped in vain that Wright would have the game ready for the convention, was instead offering conventioneers the opportunity to see Wright demonstrate the game, inside a special Spore Hut that was set up next to E.A.'s enormous pavilion.

By Wednesday morning at ten o'clock, when the trade floor opened, Wright was installed inside the hut, which could accommodate about thirty people. The line to get into the Spore Hut quickly grew to two hours long, snaking through the trade floor. Wright's mission was to play all the way through the game, which he estimates would require seventy-nine years, if one played every aspect of it (Wright is designing cheats), in seventeen to twenty minutes, over and over, for two days.

On the trade floor, screens showed guns, cars, football players, and lycra-clad virtual babes, featuring "better breast shadowing, better breast physics, and deeper breast customization," as one gaming blog put it. It felt as if we were all inside some gigantic video-game machine—the place Nolan Bushnell had imagined thirty-five years earlier.

In the E.A. pavilion, I joined a clump of gamers watching each other play Battlefield 2142, the latest sequel to E.A.'s popular shooter. I took a turn, but kept breaking out in a sweat and being greeted with the alarming sight of my face reflected on the screen—scrunched up, red, demonic-looking. Staggering out of the E.A. pavilion and into the cyber midway, I tried some of the nonviolent games, including Guitar Hero, in which the designers have ingeniously turned the controller into a guitar that you play by pushing buttons; it's like karaoke air guitar. I also tried SingStar Rocks!, a PlayStation game which measures your pitch, phrasing, and timing, and scores you as you sing. (Unfortunately, I chose Nirvana's "Come as You Are," which is not an easy song, and then compounded my problems by trying to sing in Kurt Cobain's register. "Awful" was the game's judgment of my performance, and it bothered me all day.) Finally, I got a demo of Left Behind, which is a Christian-themed video game based on the popular series of books by Tim LaHaye and Jerry B. Jenkins. You play a Christian in the streets of post-apocalyptic Manhattan, and the object is to convert as many nonbelievers as you can before the Judgment Day. You get power-ups for finding bits of Scripture, and praying raises your spirit level—which is represented by a graphic "slider" at the top of the screen. However, you have to kill hostile nonbelievers, and can acquire some suitable weaponry for the job. Violence drains your spirit level, but if you click on the pray button you can bring it up again.

The influence of Will Wright was not immediately obvious on the trade floor. His sandbox aesthetic is more noticeable in online virtual communities like Second Life, created by Linden Lab, and based in San Francisco, which uses a similar operating system to The Sims Online. Second Lifers can buy space in a SimCity-like community, and use it for commercial transactions—conducted in virtual currency that can be exchanged for real money out in the real world. Aspiring musicians can perform onstage while their music is streamed over an audio channel. Second Life seems like a logical outcome of Wright's simulation games—and it isn't technically a game at all. When I asked Wright about Second Life, he said, "I think what you're going to see now on Second Life is people who will start to develop games—someone will invite other people to kick a soccer ball around, and it will go from there."

Wright's situation inside the hut was a little like his situation in the game industry—he seemed both enthroned and imprisoned. I half expected to find Bush-

nell at the door, charging people a quarter to see the geek. I could dimly make out Wright, seated behind a raft of computers on a raised platform behind the chairs, smears of color from the monitors reflecting on his glasses. There was a large screen on one wall, where the game was projected. He had been demonstrating Spore for about five hours straight when I got there, without lunch or cigarette breaks, although the E.A. handlers had brought him a Mocha Frappuccino, his favorite drink, from Starbucks.

I took my seat. There were little holes in the ceiling, with light behind them, to simulate stars. The walls of the hut were decorated with models of creatures that other players had designed. The lights went down and the game began in the drop of water. "O.K., so we start, and I'm trying to survive here—whoops the guy wants to eat me." Wright narrated the game in the first person, and he seemed to be having fun. Using the creature editor, he put together a part-reptilian, part-avian creature, with yellow and purple stripes, four spindly legs, and talons at the end of its arms; it looked both cute and fierce. "O.K., now I have to survive and eat—whoops, I'm going to run away from that guy. Whoops, not that way—this is a harsh world right now." His creature ate another creature's egg. "O.K., now that I've eaten I feel like mating," and he located a mate the computer had generated for him. The creatures went at it, discreetly, behind a puff of smoke, to the sound of smooth jazz. "Procedurally generated mating," Wright said, with a smoker's chuckle.

Wright hurtled through the levels, evolution moving at hyperspeed as his creature acquired houses, tools, weapons, vehicles, and cities. While he was narrating his creature's adventures, Wright was also explaining how, in passing through the different levels of the game, the player would be progressing through the history of video games: from the arcade games, like Pac-Man, to Miyamoto's Super Mario, to the first-person shooters. At the tribal level you are playing a Peter Molyneux-style God game, and at the global level you are playing Sid Meier's Civilization. Finally, Wright reached the status of intergalactic god, with the power to visit other worlds. "Now we're going to go over to this place, which you can tell by the sliders has intelligent life on it, and this is actually a moon, a moon of this gas giant here. O.K., this is an alien civilization and there are a lot of different things I can do here diplomatically—I can actually use fireworks. O.K., they seem to like that. Actually, now they're starting to worship me as a god. So I might decide to pick one of these guys up." A tractor beam came down from his spaceship and sucked up one of the creatures. The natives started shooting at him. "Oops. They were upset by that."

At a certain point in the performance, the crazy ambition of Spore became clear: Wright was proposing to simulate the limitless possibility of life itself. The simulation falls between Darwinism and intelligent design, into new conceptual territory. Wright had worked out the algorithm for life, as described by the philosopher Daniel C. Dennett, in "Darwin's Dangerous Idea." Dennett writes, "Here, then, is Darwin's dangerous idea: the algorithmic level is the level that best accounts for the speed of the antelope, the wing of the eagle, the shape of the orchid, the diversity of species, and all the other occasions for wonder in the world of nature. . . . Can it really be the outcome of nothing but a cascade of algorithmic processes feeding on chance?" The old dream of the M.I.T. hackers who came up with Spacewar—to recreate life on a computer—was coming true forty years later, right here in the Spore Hut, in the form of a spindly, striped creature that looked a little like Will Wright himself.

After Wright's encounter with the other planet, he pulled back to reveal a vast galaxy of other worlds, some computer generated, some created by other players in the game who had reached the status of intergalactic gods—"more worlds than any player could visit in his lifetime," he said. As people in the audience gasped at the vastness of the possibility space, Wright's spaceship zoomed into the interstellar sandbox, looking for an uninhabited planet to colonize, just as young Will had promised his father he would. ♦

EDGAR ALLAN PROZAC