5

Play

Interviews with Bing Gordon, Brendan Boyle, Brenda Laurel, and Will Wright

I think one of the reasons why games have led the way in interaction design in some respects is because the objective is to have fun. There's not a productive outcome, so all of the seriousness that we bring to work is not present in the design of these things.

Brenda Laurel, 2001[1]

People play to learn as well as to have fun, but they stop playing immediately if the toy or game gets boring. Toys and games are designed for enjoyment, to give rewards of pleasure and entertainment from the moment that they are first encountered to the day they are discarded. That presents a rigorous discipline for the designers and implies that we have a lot to learn from understanding how to design interactive play. There is no need for patient tolerance while the design creeps gradually through the professional[2] phase. For toys and games, the design leaps immediately from a short enthusiast phase to the consumer phase, and if it fails to please, it dies a swift and certain death.

■ Child's play

Photo
Author

This chapter looks at the attributes that make the design of interactive play succeed. Bing Gordon, a founder of Electronic Arts, communicates his mastery of the video and computer game industry, explaining a taxonomy of games and interactive formats. Brendan Boyle of IDEO leads a team of designers who are dedicated to inventing toys and games, and he helps us see the design of play in physical products, most of which include embedded technology. Brenda Laurel tells of starting Purple Moon to create games for preteen girls, and brings a point of view from theater, research, and academia, as well as a lifetime of experience with games. Will Wright is a founder of Maxis, an Electronic Arts subsidiary, and creator of the Sims. He tells the story of the development of the best-selling computer game in history, which he claims is more of a hobby than a game, and gives a lucid account of the attributes behind well-designed play.

Photo Author

Bing Gordon, cofounder of Electronic Arts

Electronic Arts (EA) was founded in 1982 with the slogan "We see farther," implying that interactive technology was becoming an important part of entertainment and improving rapidly to facilitate play. Trip Hawkins[3] left his job at Apple to lead the company, starting work in an office overlooking the San Francisco airport landing path, with Bing Gordon and six other founders. W. Bingham (Bing) Gordon had studied for his BA in literature and drama at Yale University and then moved to Stanford Business School for his master's. He joined EA in a marketing role from the advertising firm Ogilvy and Mather and has been a key figure in building the success of the company ever since; he is now chief creative officer and executive vice president. He says, "I've failed at many jobs in Electronic Arts, succeeded at some, and have been here since the beginning." He is a mentor to studio producers and development teams, helping them to maintain an edge in creativity and innovation. The head office of EA is now in a large glass-covered block, not so far from where they started in 1982. When Bing shows you around the development areas, he points with pride to the creative junk that overflows from the developers' cubes, and greets everyone he meets with an easy humor. EA was the first video game publisher to treat its developers like rock stars, referring to them as "artists," giving them credit and publicity for their work, and sharing the lavish profits of the company as it grew. This strategy made it easy for them to attract the best designers.

Bing Gordon

Starting Electronic Arts

Lion cubs playing

Photo
Natphotos

Bing Gordon recalls the ideas that inspired the founders of Electronic Arts:

> One of the first precepts of Electronic Arts, that interactive entertainment was going to be as big as traditional music and video entertainment, was driven by our belief that "play" is a core human value; even a core mammalian value. We used an analogy that lion cubs learn to hunt and fight by playing together. We asserted that interactive virtual world gaming would be a way that people could train in a bunch of different ways, socialize, and get the same kind of richness that one can get in many aspects of real life, but without the risks. We imagined that people using technology could have the same kind of fun that lion cubs have when they're tussling in the Savannah, and also the same kind of utility, knowing that lion cubs that didn't become effective tusslers weren't going to eat. We also started with the assumption that some day technology was going to give us enough of a platform, that we would be able to put people in virtual worlds that looked as good as motion pictures. Twenty years later, technology has lived up to our hopes on that front.

Before Christmas in 1982, Tim Mott[4] was the ninth cofounder to join the team, as VP of technology. Trip Hawkins had chosen the name "Amazin' Software" for the company when he started, but none of the other founders liked the name, so in the fall of 1983 they held an offsite meeting to brainstorm for a better name. "Soft-art" sounded good, but it was too close to something that was already registered. Bing Gordon suggested "Electronic Artists," but there were some objections to that, as they wanted their developers to be thought of as the artists, rather than the company itself. Tim Mott suggested the modification to "Electronic Arts," and they had consensus.

With the new name agreed upon, they commissioned a local design firm[5] to design a corporate identity, resulting in a design for the logo that combined a square, circle, and triangle—the visual building blocks of graphics, rasterized to indicate technology. Bing played interesting tricks with the logo, hiding the shapes on the game covers, so that spotting them became a game in itself.

Tim Mott and Bing Gordon became close friends as they worked to make the company successful. Tim describes some of the challenges:

> At the time, the technology to support games was really primitive, as were the games themselves, but it was clear that sometime in the next twenty years, we didn't know when, the gaming technology would be able to support very rich interactive entertainment experiences. We set about building a company, a culture, and a set of processes, on that assumption. It was really a struggle for a long time, because what we were interested in doing wasn't yet possible, as the hardware simply wouldn't support it at consumer prices.
>
> When it comes to designing a game, one of the things that we figured out really quickly was that the intrinsics of the product really make a difference. It doesn't matter how much money you spend promoting a movie, if it's not a good movie, it'll fail at its second weekend after release. The same thing's true of a game; it doesn't matter how much money you spend promoting it and marketing it, if it's not a good game, within weeks if not days, word of mouth gets around that it's no fun. When people pay for an entertainment

■ Original Electronic Arts logo

experience, they're not only paying cash, but they're also making a commitment to spend time, and they don't want to waste time doing something that's not enjoyable.

From the very beginning, we built Electronic Arts around people and with people who were just crazy about games. You couldn't get a job in the company as a designer, a marketing person, a sales person, or an engineer, without being crazy about games. We spent a lot of time with people who were avid game players, figuring out what they liked and didn't like. We did extensive Beta testing and a lot of focus group research. We built a process that enabled us to incorporate feedback from potential customers and consumers into the design of the game itself.

The user-centered approach that Tim had developed when he was working at Ginn and Xerox PARC, combined with his mastery of technology and programming, served him well in guiding EA toward interactive entertainment. His aptitudes were perfectly balanced by Bing's talent for marketing and his ability to attract and retain the very best game designers. The two of them were major contributors to the amazing success of the company, which had grown to annual sales revenue of over two billion dollars by 2002.

A Taxonomy of Games

Bing has developed a taxonomy of video and computer games, categorized by the interests of the players, their age, and their gender.

The interests of the players

Nowadays people choose categories of video games primarily based on their interests. That was not the case for the first decade of Electronic Arts, because there were so few competent video games that most people who played at all tried all the best games. Their attitude was: "Finally, it's October, there hasn't been a good

new game in over two months. Now that there's one out, I better play it even though I'm not so interested in that kind of game." From the mid nineties onward, there have been more than enough really competent and entertaining games to fill the top twenty slots, so people have started to play games that line up with their interests. About half of all games are now sold to people who choose specialized categories—car games, simulations, war games, sports games, strategy games, or story and adventure games, as well as many subgroupings.

The age of the players

Bing explains that there are three ages of gamers, the preadolescent, the teen, and the grown-up. These ages have different preferences, and sports is the only category that is popular in all three groups.

Preadolescents

> Kids who are not yet adolescent really want only two things in life. One is muscle, and the other is to find freedom from the control of their parents and teachers.
>
> If you ask a ten-year-old boy, "Why do you play video games?" he answers, "At school, my teacher always tells me what to do, at home my parents always tell me what to do, or maybe my older brother or sister. With video games, no one tells me what to do; I'm the boss."
>
> These kids are yearning to grow up. When you see a ten-year-old boy and say, "Oh my, you've grown two inches over the summer," his chest puffs up with pride, and it's like, "Yeah, and you ought to see my muscles now."
>
> When they are playing games, they want to be Arnold, Deuce Staley, a WWF wrestler, or a muscle-bound Def Jam guy. They want to experiment with having huge amounts of power, and they want to feel like they are earning the virtual power with their hands. They play fighting games, wrestling games, games of physical mastery and skill, and some of the action character games with a lot of spinning, punching, and jumping. If they play sports games, they want to play primarily as a muscle character. In football they will choose to be the running back, so that they can run over tacklers and throw blockers aside; or as defenders they want to take the quarterback and plant him into the ground up to his waist.

Teenagers

The job of teenagers is to explore identity, so they like playing story games. They want to compare and contrast their own lives with parallel alternatives, because they think they've got to pick a direction by the time they're eighteen or nineteen. There are many fifty-year-old guys who get a beard, grow their hair long, exchange wives, change cars, send the kids off to prep school and start wearing tie-dye, but all teenagers think that they have to make a final choice before they grow up.

Digital virtual reality gives them a chance to play out scenarios in multiple lives. They can be Frodo, Brett Favre, or a mayor, and do it all quickly. They can use the "What if?" powers of computers to start over and try to be a different kind of Frodo or a different Brett Favre. In sports games, they want to play to see what it's like.

"Well, what if I was John Madden as a coach? What if I played like Brett Favre instead of like Jeff Garcia?"

They can try out alternate futures for themselves.

Adults

In our business, we only used to reach grown-ups between eighteen and twenty-five, but now it's more like eighteen to fifty, as the Nintendo generation ages and the baby boom generation is looking for new things to do with their savings. Adults like to justify their leisure with self-improvement. They play games for mental stimulation; if they're stuck in a rut, self-improvement shows them a way to get out of it.

Kids play flight simulator and say, "Did you see that explosion I caused? That was awesome."

Adults play flight simulator and say, "I was going to have to pay $2,500 for flight school, but ha! For only fifty dollars, I now have improved my flight rating up to . . ." Or, "I'm a football fan. Now, if I'm playing Madden Football, I'm a much better football fan." They can justify the play, and explain the value of time well spent.

The gender of the players

Gaming has been mostly male. Bing thinks that is partly because males lined up as the early adopters of computer technology, but also that in the early days of computers, the representations were mostly abstracted like Space Wars or Pacman, and it is easier to depict violence with abstracted representations than it is to show cooperation and relationships between people. Relatively recent games like the Sims[6] are played by about the same number of females as males and span generations as well. Bing describes a shift in attitudes:

> In the last five years, we have had female protagonists in popular games. Up to 1995, boys would not play with a female character; they wouldn't play with a Wonder Woman action figure or a doll, but girls would play with male action figures; they'd play with GI Joe.
>
> Starting in about the mid nineties, for the first time we saw boys willing to play with girl action-characters in toys, and in the late nineties the game Lara Croft: Tomb Raider; The Angel of Darkness came out, and a lot of boy gamers wanted to play that. There's a bit of lowering of sex identity boundaries. It's now okay for boys to experiment a little more broadly. I think the younger generation of gamers takes for granted technology-based communication, Internet and email, but also new kinds of sexual identity.
>
> Back in the nineties there were some lines of games that were targeted primarily for girls of specific ages. There were also educational games for girls. The problem with purely educational content is that kids grow through it very quickly. The best educational product ever made is the word processor; seven-year-olds can use it, and seventy-seven-year-olds can use it. By contrast, kids can blow through a "learn to spell three-letter words" game in a month, so paying thirty dollars for that game is a little like buying a Gucci product for your fast-growing child; parents figure that out.
>
> There were some well-meaning people who tried to do technology-based edutainment for girls back in the nineties and they were miserable commercial failures. One that was wildly successful for a short time was a Barbie line of games. They weren't leading edge design, but they were using what is perhaps the best girl-only franchise license of all time. It sold well for a couple of years, and then stopped selling.

Interactive formats

EA tries to put their games out on multiple platforms, so if, for example, they create a James Bond game, it goes out on a PC format, a Macintosh format, a console format, and on a handheld format. Bing admires the sixth sense that people seem to have about the interactive format that suits the game best. Even if they launch all of the formats on the same day, players know which they think is the best one. Some of that certainty comes from the way they understand the technology, some of it is precedent, and some of it is the social context. He describes the differences between the formats:

> Video game consoles are usually played by two people sitting on a couch, ten feet away from the TV. If you're playing a video game solo, you're practicing for when a friend is going to come over, or maybe wasting a little time improving your manual dexterity. You get a video game so you can have friends over on the couch. The social experience of a console game is; "I just kicked your ass! Ha, ha, ha. Want a beer?"
>
> You get a handheld game so that you can waste time during mobile moments. In the car, the kids who normally say, "Are we there yet?" are now concentrating on something else. It might be in the car, or on the bus to school. The social message of a handheld is, "I'm by myself, I'm putting up a virtual telephone booth around me, leave me alone."
>
> The PC is primarily a solo experience, played from about eighteen inches in front of the screen. The interface on the PC is much less about manually dexterity than the console. The social message of a PC is, "I'm by myself in a nice place, I'm kind of surrounded by this monitor, so if I talk to anybody it'll be through the computer." When potential customers see that there's a James Bond game coming out, they say: "Is James Bond about, 'I'm going to kick your ass,' or is James Bond about, 'Leave me alone while I'm traveling,' or is James Bond about, 'I'm going to immerse myself in a solo experience'?" And it turns out that most people think; "James Bond, hmm. You've got guns, you've got good guys and bad guys; I'm going to do that on my console with a friend."

Series from trailer for James Bond 007 game, Everything or Nothing, from EA

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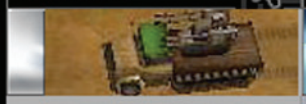

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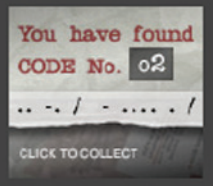

POLL

Based on what you know, which Next Gen Console will you buy?

- Nintendo Revolution
- Sony PlayStation 3
- Microsoft Xbox 360

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From Russia With Love

Medal of Honor European Assault

Need for Speed Most Wanted

The Godfather

The Sims 2 Nightlife

Brands

People also have strong associations with brands. Apple is the brand approved by mothers and art directors, who are more interested in education than entertainment. Bing describes the psychographic of Nintendo as:

> Plush doll entertainment. We've got bright colors, we've got round surfaces, this is something you don't feel bad about your six-to-twelve-year-old playing; a great experience on Nintendo is the best of children's literature. But if they're old enough to enjoy Harry Potter, they might be too old for Nintendo.

Within the game console category, Sony has a reputation for creating the leading edge of consumer electronics and owns the No. 1 brand. They offer entertaining, high-quality and innovative products, so when in doubt, people choose the Sony PlayStation. By contrast, Microsoft has moved into games with the Xbox and gained a reputation for appealing to gamers who are more rebellious. Bing thinks that is surprising:

> That's pretty weird, because you wouldn't expect a conversation that goes like this:
>
> "Hey, Ballmer and Gates are going to make a video game system."
>
> "Who's it for?"
>
> "Well, it's for slacker rebels who like guns and don't like sports."
>
> "Huh? That doesn't sound as big as the video game system for everybody."
>
> "Well no, it's not as big."
>
> Two-thirds of video gamers own multiple video game playing platforms, and they have very little confusion about which game they ought to buy on which platform. A gun game that's a little edgy might be a toss up between Xbox and PlayStation. For a cute game, they might choose Nintendo if they have it, or another platform. Games with a lot of data, or games that you want to play with more than two people are likely to be personal computer games.

■ Electronic Arts
Web site
May 2005

Image
screen capture

Number of players

Over the last twenty years, there has been a trend toward socialization in games. EA does regular focus groups with randomly selected children in junior high schools. Bing describes a sudden shift in attitudes:

> Junior high schoolers who played games were all loners until 1987 or 1988; they walked into a room, and you could tell through a two-way mirror that you might want to take an Air Wick with you if you went into the room.
>
> Then there was a sudden change, and we had a lot of class presidents starting to show up in the focus groups. At first we thought it was random, but then we realized that every junior high school was starting to have kids who were opinion leaders about games, whose social role was to know what was going on with games, and that conferred as much status as being the quarterback on the football team.

When EA Sports launched on the Sega Genesis in the early nineties, two-player games started to get more popular, and since then about half of the games sold are used predominantly in two-player mode. In 1994 the launch of DOOM set a precedent for two-player games on personal computers, and by the end of the millennium, multiplayer games were getting popular, with an increasing number of versions running on servers:

> As you know if you've ever done paintball, two-player paintball isn't a whole lot of fun. But with thirty-two player paintball, you get to a critical mass, and it's fun. I call those *n*-player games. You've got one-player games, two-player games, a little bit of four-player games, and *n*-player games. Ninety percent of the handhelds are one-player games, 50 percent of the console games are one-player games. For PC games, as connecting to other players via the Internet is easier, one-player games are probably down to 30 percent.

Input Devices

The three ages of gamers have different needs for input devices. The preadolescents like plenty of physical controls, so that they can exercise their muscles and feel the power. Adults are just the opposite, as they are interested in self-improvement and mental stimulation, and a daunting physical interface puts most of them off. They think, "Forget about it. That's not who I am, that's not what I want to do. It's too complicated, and I don't want to go through the learning curve."

In order to appeal to broad audiences, the video game console makers tend to add a little bit of complexity every few years. That keeps the controls familiar to existing audiences but adds some novelty. There is a catch there, in that newcomers may be put off by something that appeals to the loyal player. Bing describes the quandary:

> Someone who sees an ad on TV says, "Ooh, those graphics look good! I want to play!" Then they pick up a controller and think, "It's going to take me fifteen years to use this thing."
>
> People who've been playing for fifteen years go "Yeeah! Huh? All right. Great!"
>
> For mass-market games like Lord of the Rings, we start the game in a mode that bypasses the physically daunting controls. We might start by saying: "Kill these Orcs just by pushing X. Ah, you seem to be succeeding. Oh, that's perfect. That's excellent! Ooh, you are awesome. Let's try something new. Now, push triangle. Look at the way you split that shield. Oh, that's just awesome. X again, X again, you got it? Okay. Triangle again! OOOOH, you're perfect, you're awesome. . . . Now let's try the circle. Ready?"
>
> You try to gradually get people through the learning curve. If an expert comes along and says, "Yeah, yeah, I can do that. Where's the super Orc? This is easy, perfect, perfect, perfect! This is so easy."
>
> Then we can say, "Maybe you should be playing in expert mode."
>
> Then it's, "Ah, X, X, X . . . good? Hey, where'd my perfect go? Good? Fair? Whoa, okay, I gotta pay attention."

Electronic Arts has also explored the market for specific input devices. Between 5 and 10 percent of the people who buy car-driving games will buy a steering wheel, and 15 percent of the people who buy flight simulator games buy the control column and pedals. There are consoles for fighting games with oversized buttons and floor mats that people use for dance steps. To sell easily, specialized input devices have to be priced at $29 or less, which means that they are not very physically robust and electronics are minimal. For example, force feedback is too expensive to meet these criteria. Bing explains the underlying limitations:

> If an input device is more than $29, the cost of making you more expert in the game is too high. The game itself costs you fifty bucks, and you may play it for a hundred hours, so you don't want to spend another $50 to be 5 percent better; however, you might spend $3 to be 5 percent better. On the other hand, if somebody's going to spend $500 for a fighting game, or if they're in tournaments in a fraternity where they're plunking down $20 every Friday and Saturday night, being 5 percent better could mean a difference of $500 in winnings a year, and therefore they would explore alternate input devices. There just aren't many people for whom the price-performance of more customized input devices pays off.

During his first two decades of steering the development efforts at Electronic Arts toward success in the marketplace, Bing Gordon has amassed a deep and intimate knowledge of the way people play and the games that they enjoy. He has become a treasure trove of market research information and understanding, so that whenever the designers in his R&D organization show him a prototype of a new concept for a game, he responds immediately with an erudite explanation of who will play with it and why they will enjoy it. He offers an evaluative filter for new design ideas but is not the actual creator or inventor of the new concepts. For that he relies on his ability to attract the best and most creative game designers to work with him.

Next we meet Brendan Boyle, who specializes in coming up with the concepts in the first place. He leads a design team at

IDEO through the process of inventing new toys, games, and products for children. His focus is on creating a stream of ideas for new designs, and he has evolved a process for moving quickly from concepts that are harvested from brainstorms through rapid prototypes and trying the designs out with kids to communication pieces that can be used to demonstrate the concepts to the experts inside toy and game companies. The chosen designs are then licensed, so that Brendan and his team can see their designs on the market carrying various brand names. He takes us through his process for inventing toys and games and describes three examples.

Photo Author

Brendan Boyle

You can find Brendan Boyle sitting at a tiny desk, close to the rest of his group of creative designers at IDEO. He kept the desks small and close together so that people in the team can see and hear one another easily as they talk about inventing toys and games. The intimate setting also leaves space for a little shop for physical models and mockups right there in an adjoining room, and another area for electronic prototypes. Equipment for making videos is scattered around the studio. Just outside there is a low, round table with little chairs, surrounded by all sorts of playthings; that is where the kids come once a week to try out the new prototypes. Brendan was always taking things apart when he was young, and sometimes managed to put them back together as well. His older brother Dennis[7] could help with the reassembly and demonstrate a path toward design. Brendan graduated with a degree in mechanical engineering and then went to Goodyear, where he learned to design wheels. He found his niche in the product design program at Stanford and went on to work with David Kelley, designing products that ranged from a yogurt container to a tablet computer. He had entrepreneurial ambitions, so he branched out with a business partner, founding Skyline to develop some ideas he had for toys. He discovered that there was a well-established culture of invention in the toy and game industry and went on to become expert in the field. When Skyline was successful, he brought it back into IDEO.


TYCO
DOG CATCHER

Brendan Boyle

Children . . . may have more fun with pots, pans, and a wooden spoon than the latest hot toy or game. In a market sense, the words "toy" and "game" mean a plaything that an adult is willing to purchase, rather than just an item that a child wants to play with, which would include almost anything.

Brendan Boyle 2004

Inventing Toys and Games

■ Focus play group

Photo
Nicolas Zurcher

Inventing a toy or game is a rigorous process. Brendan has ten people in his team, dedicated to understanding play and focused on coming up with new ideas that have a chance of succeeding in the marketplace. They spend a lot of time brainstorming, yielding a stream of new concepts. He describes how they build prototypes of the designs that are close to the intended result, so that they can try them out on kids to see if they like them:

> We do a lot of prototyping; if you visit us you'll see that we've designed our space to be like a big project room. We wanted very small desks to take up less room, and then have a bigger tinkering lab in the back. We have an electronics lab and a mechanical lab—a place that's only twenty feet from your desk to walk back and start building something.
>
> We do a lot of proof-of-concept models that we won't show to anybody; we're just trying them out ourselves to see if an idea has merit. We set up brainstorms on a regular basis, and we also try to get out to the toy stores once a week just to see stuff that's happening. People think that things stay the same month after month

in a toy store, but that couldn't be farther from the truth; it's such a charge to see what's going on. You can spark new ideas by going to stores on a regular basis, like Toys "R" Us, Wal-Mart, Target, and the specialty stores.

One of our cornerstones is having kids in to play with our stuff. We commission a group of five to seven kids every six weeks. We have them in once a week and try new things with them, both things that we're working on and things that we've bought and tested. We call it a "Focus play group"; we have a couple of adults, the same ones for the whole time, so they start to build a little trust. They sit down, ask them a lot of questions about what they're into and what's interesting, get a conversation going, and then try some new things.

The only rule we have is, "Anything you're not interested in, just tell us, and then we'll move on to something else."

That is a little bit different from structured play at a preschool, kindergarten or elementary, where they'll say, "We're going to do twenty minutes of painting and then we're going to do twenty minutes of this."

The more you work with kids, the more you realize that they have a very serious side; they have issues that bother them, they have pressures, they have all sorts of things. It may seem an obvious thing to say, but they're little people!

A trap that a lot of designers fall into is thinking, "Oh yeah, I remember when I was a kid; I remember what was cool," but you just can't. If you try to think back to your earliest memory, it's most likely to be an amalgam of a bunch of memories that have come together.

Once an idea has got past the hurdles of proof of concept, prototyping, and testing with the target audience, it is time to start concentrating on trying to sell it. The designers make little videos, often similar to TV ads, to demonstrate the play values of the ideas. Brendan spends much of his time maintaining the relationships with the people in the industry who may be interested in licensing the concepts. It is not as simple as getting into a toy company and saying, "Hey, I've got a new idea!" You have to gradually build their confidence in your process, professionalism, and integrity before you ever get to the invention concept. Until that trust is established, they are hesitant to even look at an idea. They may already have a similar concept in their

portfolio and worry that the inventor will sue them for copying, not believing that there was a preexisting or parallel design.

Brendan and his team members also have to understand what a Mattel or Hasbro will need to sell to their client, probably Wal-Mart or Target. They have to be grounded in unit cost, understanding what a toy or game can sell for:

> People want to pay the same for a toy or a game today as they did ten or fifteen years ago; it can do more and more, but it should cost the same. It seems that $20 is a magic price point for a birthday gift, and about $10 for an impulse purchase. This pushes us to do more and cost less. We have to leave a lot of great things on the design room floor, just because of the price point.

When this process is successful, the toy company licenses the concept from the invention team and sends it off to their vendors for development, and manufacture. There is a well-established network of offshore facilities for manufacturing, engineering development, and detailed design. The vendors used to be most often in Hong Kong, but there are a growing number of other options now in Asia. The turnaround is typically around six months, with the target always being the all-important Christmas season.

Brendan and his team spend a lot of time coming up with ideas, but just as much time trying to sell them, because the hit rate is so low. Even today, though they have licensed over 125 items, he is still amazed when someone buys a concept, because everything needs to line up. You have to have a great concept, the company has to have the right timing for it, and the business opportunity has to fit their strategy.

> Children will play with anything that is available to them. Play includes learning, imagining, pretending, competing, discovering, socializing, and almost everything that kids do; they are just interested in what is enjoyable and fun, without noticing that they learn from playing. They may have more fun with pots, pans, and a wooden spoon, than the latest hot toy or game. In a market sense, the words "toy" and "game" mean a plaything that an adult is willing to purchase, rather than just an item that a child wants to play with, which would include almost anything.


FOOTBALL

Companies in the toy and game industry are always looking for a big hit to drive the fourth quarter, because everyone is looking for the hot toy. Some examples of the big hits of the past are the Hula Hoop, the Cabbage Patch Doll, Teddy Ruxpin, Furby, and more recently Tickle Me Elmo. Sometimes a new design that looks like a short lived hit when it is launched, rockets up on a high trajectory of popularity, but never plunges to earth; this is called an "evergreen" and is the goal for every toy invention team and every toy company. The nearest that Brendan and his team have come to an evergreen so far is the Aerobie Football, which has been on the market for over ten years. There are between fifty and a hundred evergreen toys, including, for example, Mr. Potato Head, Slinky, Silly Putty, Yo-Yo, and Twister. Brendan hopes and expects to eventually create something that gets on the evergreen list.

Here are three examples of Brendan Boyle's designs:

Aerobie Football[8]

■ Aerobie Football

Photo
Nicolas Zurcher

When Brendan started Skyline with a partner from the Stanford Business School in 1992, their first success was the Aerobie Football, which is still selling today, more than a million footballs later. The first idea was to have a foam football with four fins on the bottom, just tiny ones that would be self-teeing, to make it easy to stand on end for kicking. They were thinking of Charlie Brown, remembering that Lucy would always pull the ball out, and he would fall over, but they thought he would have been able to kick the ball without Lucy if it was self-teeing.

When they were prototyping the fins, one of the mockups had twisted fins by mistake, and when they threw it they noticed that the twist made it easier to throw a tight spiral. They went back to the drawing board, accentuated the propeller design, and reduced the fins to just two. It worked! They were able to license the football idea quite quickly, and it came out eight months later; this gave them something to point to, which helped their credibility with the toy companies.

Finger Blaster[9]

Brendan recalls the development of the Finger Blaster, a dart made of foam that is light enough to be harmless, but can fly far and fast:

> I think foam ball came out in 1969. Indoor foam play was the whole idea, and now it's become almost a word in the English language. You can find foam footballs, soccer balls, and various kinds of projectile. We did an item that has its own cult here at IDEO, called the Finger Blaster. It's a really fast-flying foam dart that had a built-in shooter in it. The first built-in shooter was a rubber band, and the manufactured one is a nice molded part. I remember taking the first prototype home and shooting it past my wife. I was really proud of this invention; it just zinged by her head, and she said, "Brendan, that's a terrible toy, don't sell that to anyone!"
>
> I knew at that moment that there might be some potential resistance from moms, but we'd probably have a big hit! She still hates the toy to this day! My son, who's now eight, shoots the thing better than I do, so it's become an outdoor toy for sure. They've sold millions of them.
>
> There were foam darts and shooters, and then the Super Soakers came into play. You can buy a pressurized squirt gun that shoots twenty yards, with eight gallons of water that you can carry around.

■ Finger Blasters

Photo
Nicolas Zurcher

Fib Finder
EXTREME
Totally Truthful
All facts
Smooth Talkin'
Way To Go
Lookin' Good
No way, friend
False hood
ALL TIME FIBBER

Fib Finder[10]

When designing physical games, or toys for that matter, it helps Brendan and his team to compete for notice when they include a bit of technology, because they are always compared with the internal groups at Mattel and Hasbro, who also have talented and experienced designers.

Brendan enjoys the game examples particularly, because they bring people together:

> Games are an interesting category. I like designing games because they are all about social interaction. You are getting kids together, or families together, not in front of the TV, but in the family room, sitting round a table or on the floor. That's kind of a wonderful feeling.
>
> We did the Fib Finder game, a unique lie detector, which gives a good impression of telling if kids are telling the truth or not. It was fun when we tested it, seeing girls aged eight to eleven, with what we call a "high giggle factor." It was this slumber party laughter. They were having such an enjoyable time because the questions that we wrote were open ended, so that they would find out new things about each other. That was very satisfying!
>
> It's that whole quest of getting folks playing together and talking. It's most popular with girls, because they are less into video games. We're doing a boys' version of the Fib Finder called High Voltage, where again you have a lie detector. This one gives you an electric shock, a mild one; well really it's a fake one, but it feels like it. Again, it's made successful by the proper kind of questions that get boys thinking and chatting. It's the software where you really want to put your thinking.

■ Fib Finder

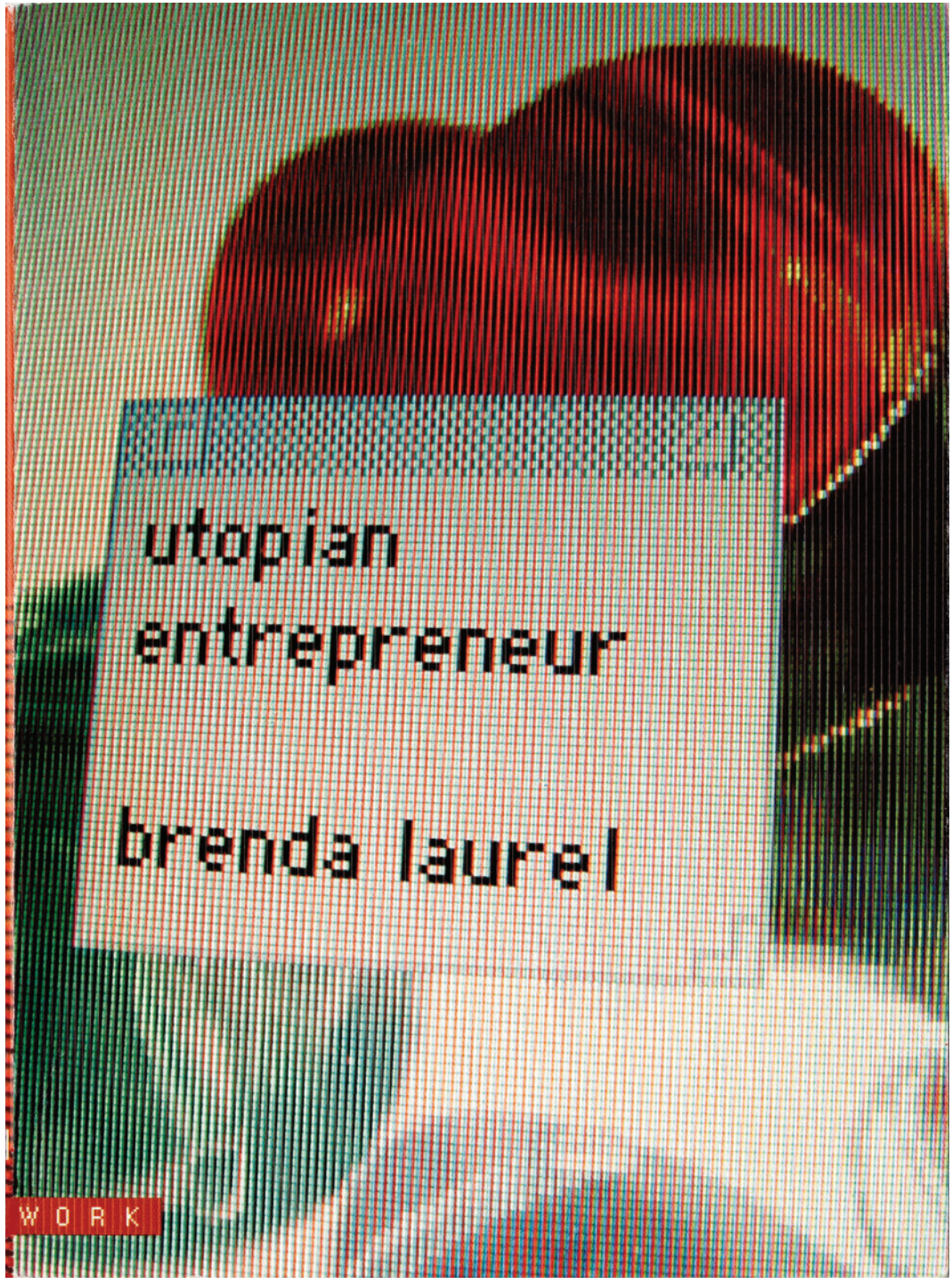
Photo
Nicolas Zurcher

The question of designing play that appeals to girls as well as boys, and games that are particularly for girls, is addressed in the next interview with Brenda Laurel. When at Interval she focused on this question, working on an extensive research project to understand gender differences in the context of play and used the information to form a spin-off venture called Purple Moon that developed interactive media for preteen girls.

Photo Author

Brenda Laurel

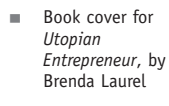
Brenda has been dubbed a "digital diva," a reputation that she has earned by living in the world of theater at the same time as the world of computers, showing designers and engineers how to think about the people that use their products and how to use enactment to inform design. Currently she is chair of the Media Design Program at the Art Center College of Design in Pasadena, where she is teaching students how to use improvisation to think about designing interactions and experiences. She is also a Distinguished Engineer and director of the Experience Design group at Sun Microsystems Laboratories. Brenda Laurel is a researcher and writer whose work focuses on designing play, interactive narrative, and the cultural aspects of technology. Her career in theater and design spans over twenty-five years. She holds an MFA and PhD in theater from Ohio State University and has published on numerous topics, including interactive fiction, computer games, autonomous agents, virtual reality, and political and artistic issues in interactive media. Her first book, *Computers as Theater,*[11] was published in 1991, and she has edited two compilations, *The Art of Human-Computer Interface Design*[12] and *Design Research*.[13] She has worked as a game designer, producer, and researcher for companies including Atari, Activision, and Apple. In 1990 she cofounded Telepresence Research to develop virtual reality and remote presence technology and applications. Brenda was one of the first people to join Interval Research in Palo Alto, where she examined gender and technology, leading to her helping to found the spin-off Purple Moon, a company that developed interactive media for girls, where she served as VP of design. When the dot-com boom turned to bust, Purple Moon was snatched up by Mattel.


utopian
entrepreneur
brenda laurel
WORK

Brenda Laurel

I was a utopian entrepreneur. Maybe I still am. But for a time, I was also Cmdr. B. Laurel, a Navy test pilot, and I rode a modified F-14 into the desert floor. I've made the 60,000-foot downward spiral in some of the F-14 Phantoms and F-18s of the computer game industry—Atari, the old Activision, Epyx. This last time it felt different—I think I was fonder of the plane. My F-14 was Purple Moon, a company I cofounded, which was devoted to making interactive media for little girls. It was a dream come true. The ironic thing about this flameout was that I got into doing games for girls precisely because I was so tired of seeing things explode.

From the start of Brenda Laurel's *Utopian Entrepreneur*[14]



Book cover for *Utopian Entrepreneur*, by Brenda Laurel

Photo
Denise Gonzales Crisp

Games for Girls

Can a design for a girl be the same as the one for a boy? Are there real differences between the sexes, or have we just grown up to expect them? When Brenda Laurel joined Interval Research, she decided to try to answer those questions. David Liddle explains his point of view in sponsoring this research:

> When we were at Interval we made a decision to ask some questions that had traditionally been thought of as out of bounds. This had to do with gender preferences in electronic media. We looked at this across all age groups, but with a particular focus on preteens. At that time, we found a very marked difference between boys and girls in the use of any kind of computing capability.
>
> This was before the emergence of the Internet. At that time, it was quite striking that there was an enormous $10 billion industry producing video games for boys, but there just was no segment of any

> significance that was serving girls. We did quite a bit of field research. I was so lucky to get Brenda Laurel to come to work with us at Interval, and she led a really excellent research project, which we called Safari because it was meant to be the search for the big game that girls would play. We did a couple of years of research in that area, with ultimately probably a thousand kids.

The first step was to understand more about the way the brain works. The politically correct silence about gender difference has started to fade away, and there has been time for a lot of research into brain-based gender differences. The most marked difference is that girls have better linguistic and social skills than boys, while boys tend to find three-dimensional graphical manipulations easier.

Brenda explains the connection between maps and video or computer games:

■ Brenda Laurel

> We did a massive amount of literature searching first. We found a lot of stuff, especially in the area of brain-based sex differences that are statistically significant; small, but large enough that they get amplified by cultural narrative. For example the story that women can't read maps well as men has to do with a brain-based difference in how males and females tend to prefer to navigate. You see women turning maps upside down because they want to have a body orientation toward the direction that they are moving.
>
> When you looked at traditional computer games, in the early days at least, you had the left to right scrolling thing going on. That's a mental rotation like turning the map upside down, if you're trying to put yourself in the position of the actor or the agent, and then you've got the translation from the plane of the keyboard to the plane of the screen. Gosh! That kind of explains some things.

Brenda had been immersed in the electronic game industry since the seventies and had helped to create many computer games, enjoying them as she went along. This convinced her that there was no underlying reason that girls would not play with computers but made her want to find out how to create games that girls would really like. She called Christopher Ireland[15] in to help with the gender study:

We looked at play preferences in terms of favorite toys and got kids to take pictures of their play activities and bring them in. We looked at gender signaling in toys. How do you know this is for a girl or for a boy? The fun part there was mixing up signaling traits in the same toys. For example we made a pink furry truck, and we learned that pinkness overrides truckness. We did a diary with bullet holes in it, and found that it is still a diary and a boy won't use it. We ended up with this little hierarchy of what you can get away with in gender signaling. We made the choice, based on the differences that we saw there, that we were going to aim the games specifically at girls rather than do the politically correct thing of gender-encompassing games.

The research was yielding a strong point of view about how to create designs for the big game for girls that the name "Safari" had implied. David Liddle was eager to set up spin-off companies to commercialize products based on the intellectual property that Interval was creating. This would be essential if Paul Allen, the cofounder of Microsoft, was to have a return on the hundred million dollar investment promised to Interval for ten years of operation.

Purple Moon was funded through Interval but structured to behave independently, in a similar pattern to the typical Silicon Valley startup company. Brenda was a founder and member of the board of directors, as well as the development leader as VP of design. She worked with Christopher Ireland to consolidate the findings from the research and translate them into design principles for use in developing products for preteen girls.

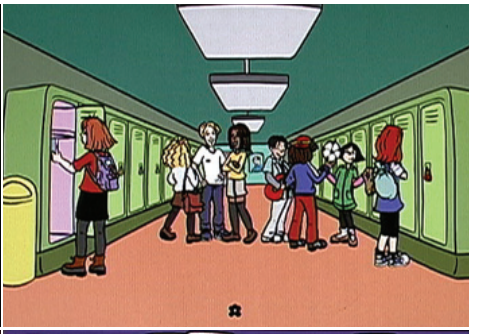
After a stage of advanced development inside Interval, the company was formed and in 1997 launched three interconnected businesses: interactive CD-ROMs, the purplemoon.com Web site, and an array of Purple Moon collectibles:

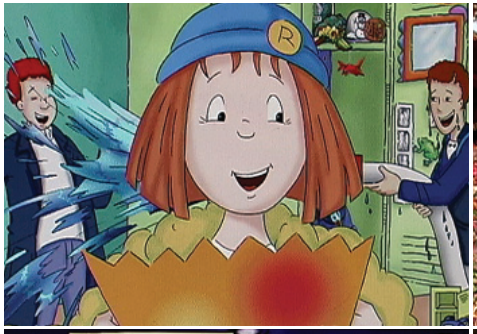
We made the decision early on that we wanted to create a world with characters that girls could affiliate with, where girls could have emotional rehearsal space for the social lives that they led, hoping that they would find that they had more flexibility, and that they would have more elasticity in their own lives. It's really fun for them to think, "Gee, how would that have gone if I'd done it a different way?" They could always rewind, make a different choice, and see what would happen instead.

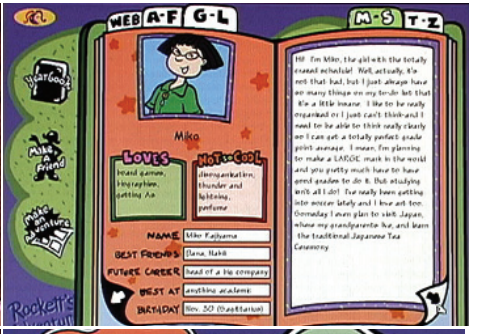
CD-ROM and Purple Moon collectibles ■

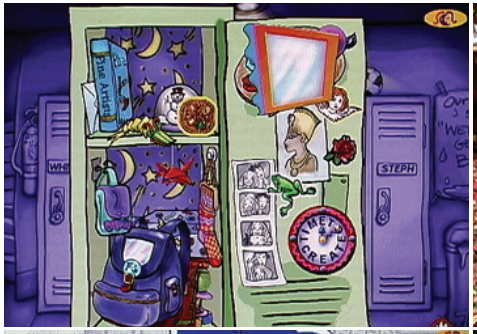

Rockett
New Adventure
Save My Place
Select Adventure
End
soft
LOUD


Purple Moon



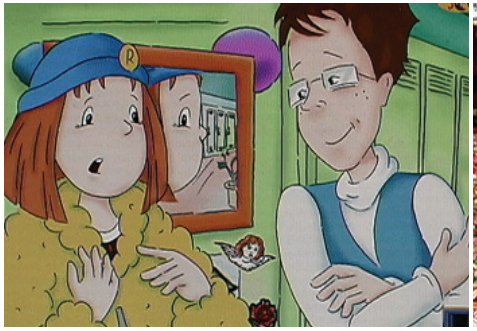



WEB A-F G-L M-S T-Z
Mika
LOVES
NOT SO COOL
NAME
BEST FRIENDS
FUTURE CAREER
BEST AT
BIRTHDAY




Make a Face
Color Skin


Fab Fashions
Color Top




Make A Friend

In the other series of games, the Secret Path series, we looked at the inner fantasy world. We learned by interviewing girls that they usually placed that kind of activity in a more natural romantic setting. We got some surprises there. I always thought that there'd be lots of nurturing and taking care of animals and flowers and things, you know this sort of stereotype that we have.

The girls that we spoke to told us that, "No, I go there to be alone, and if anything I want the animals to take care of me. This is where I get taken care of. I'm going to get information from fairies or secret beings in the woods. I'm going to explore on my own. It's not a place I take my friends."

Girls told us that video games were boring. They have this predisposition toward narrative play, in fact narrative construction. When we talk about constructive play, we think about hammering things and making snow forts and stuff, that's a stereotypically "boy" form. Although girls do those things, they are much more interested in the kind of constructive play where we make up a family, or make up a couple of sorority sisters, so that there's an ongoing narrative; that was the piece that was missing for them in traditional games. They are not overtly competitive, so getting a high score, or having a game that yields a score, or has you play against the clock, is intrinsically not as interesting as monkeying around in the lives of some characters and seeing how you can change what happens.

■ Purple Moon screens

Left column
Rockett's New Adventure at school and her way of thinking

Center column
Coloring the steps, to find the magic stone and put it in the purse

Right column
Creating a new friend, and giving her character hair and clothes

The choice of CD-ROM for the game component of the product line turned out to have limitations, as the e-commerce surge was just getting started, and CD-ROMs were giving way to online games. From the beginning, Brenda had been interested in bridging the gap between media, hence the combination of computer-based game, Web site, and the physical manifestations of the little dolls and the characters. She wanted Purple Moon to be a participatory place for the girls who used it, so that they could appropriate the characters and the situations and rework them to construct personal relevance and meaning. The Web site was a successful vehicle for this and turned into a very social space.

They were doing this before there were any off-the-shelf, e-commerce infrastructure packages, so they were desperately trying to build their own shopping site in order to support the activity, and that was an expensive proposition. In the end, it

■ Playing with Purple Moon collectibles

turned out that the Web site was the most successful part of the whole project; the CD-ROMs primed people to go to the Web site and enjoy the social interaction, supported by the material from the CD-ROMs and the new stuff that they could pick up online:

> A part of the interactivity that you had to really probe the game to find was that you could always go to the lockers and look in a character's locker. Since everybody was worried about girls snooping, we had a thing where when you open the locker the child would welcome you, "Hi, I'm Jessie." It wasn't like you were peeking in their locker. The contents of the locker, including journal entries and pictures and stuff, would change depending on how you had played the game so far.
>
> The Purple Moon site was one of the few sites in those days that didn't feel lonely. The first thing you saw on the screen was who was there. There was an internal postcard system, like an internal email system, so that we could protect kids from predatory behavior by adults. There was always a sense that it was populated by both characters and players, and that these two worlds could blend there, that they were intermingled.
>
> We were very proud of the strength of the community that formed on the site. In fact, when the Paul Allen Group suddenly pulled the plug on the company, we put a "Farewell" screen over the front of the Web site. About three weeks later we got some additional funding to bring it back up, so that girls could connect with their friends and they wouldn't be lost forever. During the time that it was down, we got about three hundred new registered users. Girls hacked into it, or they had bookmarks inside of the site, so it was successful even in death. It stayed very well populated even when Mattel was handling it, and they weren't really servicing the properties with new materials.

Brenda was deeply disappointed that Purple Moon did not survive, and if you read *Utopian Entrepreneur*, you will feel bitterness behind her account of the events that made her describe it as a "flameout." The design principles are still with her, and with the other people who were involved, so perhaps one day soon we will see an emergence of electronic games that are deeply valued by preteen girls.

Will Wright is another designer who has succeeded in creating games that appeal to girls as well as boys. He has designed a series of computer games that combine the characteristics of hobbies with enjoyable play, culminating in the Sims, which is the best-selling computer game to date. Next he tells the story of developing his series of simulation games and explains the structure and aesthetics of computer-based play.

Photo courtesy of Electronic Arts

Will Wright

Will Wright is the best-known guru in game design, partly because the Sims is the best-selling game of all time for personal computers, but more significantly because he is so articulate about what he does and how he does it. He remembers the books he has read, and quotes the titles and authors as he talks. He thinks through the reasons behind his design decisions and presents an analysis in simple and accessible terms. His manner is direct and unpretentious, and although he normally seems serious, there is often a twinkle in his eye. Will bought an early Apple II in 1980 and found himself immediately sucked into writing programs and building simulations. His first game was published in 1984, and the first version of SimCity was developed a year later, running on a Commodore 64. He founded Maxis in 1987, with managing partner Jeff Braun, and created a series of simulation games, culminating with the Sims. The games in the series have earned a reputation for intelligent and creative design, with a sense of social responsibility. If you add up all the different games, they have sold more than 8 million copies worldwide. Maxis had a down period after going public in 1995, with the pressures of quarterly profits forcing them to try to build too many titles. They ended up being acquired by Electronic Arts and were rescued by strong management, allowing Will to focus on what he does best. They are now a self-contained division, employing around 160 people, building on the success of the Sims by developing new versions that can be played both locally and online.


U.S. NAVY
SIMS
SIMS
FOOD STORES
THROUGHOUT
N.Y.C.
Who Owns the Sun?
BRUCE STERLING
SCHISMATRIX PLUS
ONE CITY / TWO VISIONS
Energy & Land Use
Burchell and Listokin
ENERGY FORECASTING FOR PLANNERS:
TRANSPORTATION MODELS
Municipal Expenditures, Revenues, and Services
DRAW FROM YOUR HEAD
人世祭事
THE WAY THINGS REALLY WORK
Captured by Aliens
Joel Achenbach
are we alone in the cosmos?
TUFTE
VISUAL EXPLANATIONS
MAPS OF THE MIND
ENTERING SPACE
ZUBRIN
MACVEY
INTERSTELLAR TRAVEL
GOLF by DESIGN

Will Wright

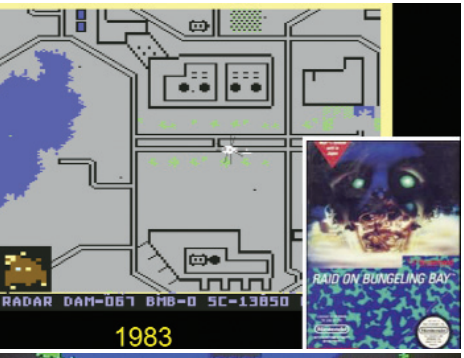
Models

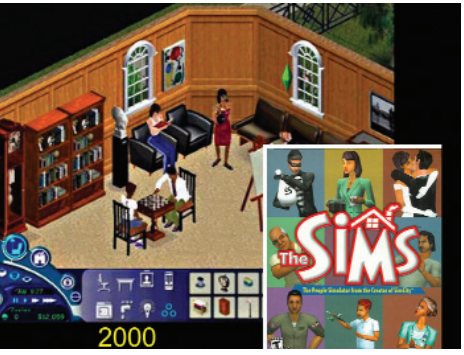
The shelf in Will Wright's office

Photo
Author

"As a kid I spent far too much of my time making models!" says Will Wright, as he sits at a round table in the middle of his spacious office. The habit has not left him. The table is covered with an architectural construction toy that he is playing with. He clips the wall segments into the floor grid and patiently builds a multilevel structure with rooms and windows. The toy is his own invention, designed and prototyped in his spare time. There are models everywhere you look. A black military helicopter hangs from a fishing line, silhouetted against the brilliant blue California sky outside the window. The long bookshelves on the wall are littered with plastic construction toys formed into a dinosaur and a sphere, more helicopters, and memorabilia of Maxis products. There is a model of a DNA strand next to the electric scooter that Will uses to zoom around the building.

His life has intertwined these physical models with the more abstract modeling of software constructions. He thinks about everything that he encounters as a potential model, abstracting





- Model helicopter in Will Wright's office
- Raid on Bungling Bay (1983)
- First version of SimCity (1985)
- SimCity (2000)

behaviors into sets of rules and probabilities that can be modeled as a computer program. He spends his days guiding his team to write code, describing more and more sophisticated models of people and their social interactions. His games have the compelling qualities of soap operas, but rather than leaving you an inactive couch potato, they engage you in the action, becoming an addictive hobby as well as a game. In his spare time he develops robots with his teenage daughter and enters them into the local "robot war" competitions.

When I was a kid, I was very fascinated with the process of building models of little aircraft and tanks, but also as I built them, I was a big student of World War II history. It would bring me to understand and spark my interest in these different things that I was modeling. I started transitioning to models that actually had behavior, that were mechanical and would move around and do things, and I got very interested in home-brew robotics.

When the first personal computers came out in around 1980, I bought an early Apple II. The original idea was that I was going to use this to interface to my robots, and in fact I started doing that, but I got totally sucked into the software side of it, especially simulations. The idea occurred to me that you could build virtual models inside the computer, not only as models of the static structure, but also as models of the process; these models could have behaviors and dynamics. At that point I decided what I wanted to do. I wanted to learn to build these models, and that's when I started pursuing it as a career and went from there into the game industry.

The first game I made was around 1983. It was called Raid on Bungling Bay. It was one of these stupid shoot-up things, flying a helicopter over these islands bombing everything. It was on the Commodore 64 and was published in 1984. There was a lot of piracy back then, so it didn't do that well in the States, but in Japan it was one of the first American games put on the Nintendo, the very first Nintendo system, and there it sold about a million units. When I was designing that game, part of it involved me creating this landscape that you would fly over and bomb. It was a landscape of islands with roads and factories and things, and I created an editor for doing that, where I could scroll around and put down the roads and things. I found that I was having more fun designing and building these

islands than I was bombing them in the game, so I took that editor and I kept working on it.

I started reading some of the theories about urban dynamics from Jay Forrester.[16] I started programming traffic models and then growth models into my editor. All of a sudden the subject of city planning and urban dynamics became utterly fascinating to me, because I had this little guinea pig on the screen in front of me, so that I could test out theories. I could actually program in the theory and see what would grow out of it, what would happen. I began to think that other people would enjoy doing this. If they had a little toy city to interact with and build, I thought that they would enjoy it as much as I would, and that's where the idea for SimCity started.

Will developed his first version of SimCity in 1985, to run on a Commodore 64. The publishers kept saying, "When's the game going to be finished?" They were expecting a more definite win-or-lose ending to it, like all games had at that time. He kept trying to tell them, "No, it's more of a toy, and less of a game," so they lost interest in it and never published it. In 1987 Will met Jeff Braun at a pizza party and got talking about ideas for games. Soon they were poring over the Commodore 64 and Jeff was falling for SimCity. This was the start of a long and fruitful partnership, as Will's talent for game design was perfectly complementary to the entrepreneurial energy that Jeff contributed. They started their own company to publish SimCity for home computers and called it Maxis. Jeff provided the space, setting up the office in his apartment. He was tireless in his development of the business and in 1989 made a copublishing deal with Broderbund. Sales started slowly, as the game was much more intellectual than anything else on the market, but a breakthrough came when *Time* wrote a full-page article about it, and it was soon the hit of the industry. SimCity did very well for Maxis; it paid for a lot of mistakes as they were growing the company:

We did a lot of other Sim games. The next game I worked on was SimEarth, modeling the earth for the last four billion years. It was inspired by the work of James Lovelock, who wrote about the Gaia hypothesis,[17] and in fact he worked with us as an advisor on the game.

SimCity (1989)
SimEarth (1991)
SimAnt (1993)
The Sims (2000)


File
Speed
Options
Disasters
Windows
Newspaper
Help
Oct 1991 ‹Oakland› $20,000
Query Tool
Fire Storm
RCI
Chris's house
Caldecott Tunnel
Hwy 24
Lake Temescal
Eubanks 7
Hwy 13

> The next game I did was called SimAnt; it was actually based on the work of Edward O. Wilson, who is the premier myrmecologist in the world. He had just published this very large book called The Ants[18] that won the Pulitzer Prize that year. Ants have always fascinated me because of their emergent behavior. Any single ant is really stupid, and you sit there and try to understand what makes it tick. If you put a bunch of these little stupid components together, you get a colony-level intelligence that's remarkable, rivaling that of a dog or something. It's really remarkable, and it's like an intelligence that you can deconstruct. Ten- and fifteen-year-olds really got into SimAnt; it was really successful with that group. Most adults didn't play it long enough to realize the depth of ant behavior and mistook it for a game about battling ants.

For about six months after SimAnt, Will Wright started formulating ideas that were more about social models of interactions among people and would emerge eventually as The Sims. There was a lot of pressure from the market for a new version of SimCity, but Will was more excited about his new direction, so he asked a colleague who had collaborated with him on SimEarth to take on the sequel. In due course a prototype for the next generation of SimCity was delivered, but it was designed from a bad perspective and included some unstable code from SimEarth. The reluctant Will was forced to drop everything else and take over the project, so for the next year and a half he worked on SimCity 2000. He introduced an isometric perspective that made the landscape three-dimensional and augmented the interface without altering the successful elements of the first game. It was released for DOS in 1994, and quickly became the best-selling game on the market:

■ SimCity 2000 Oakland Fire Scenario

> When we did SimCity, a lot of people started sending us letters about the game, wishing that we would add x, y, and z. I had this huge stack of letters in my office, and I read all of them, to find out what people wanted. At the same time the technology had progressed quite a bit from the original SimCity, so I started looking at what we could do with the model, how we could make the game more compelling, more visceral. The major difference was that there was three-dimensional terrain. It had much more of a 3D feel. We had deeper

> levels of infrastructure: we had three different types of road rather than just one road. We had a whole national model around it—there was a context for your city and the neighboring cities.

With the successful sequel yielding a stable income stream for Maxis, Will was interested in expanding beyond the Sim series. One of his new ideas was for an open-ended adventure game combined with a flight simulator. It was called The Hindenberg Project and was based on the famous airship that exploded in 1937. He assembled ten theories about the cause of the accident and made the players discover which theory applied to their game. This involved a new type of probability model but also built on the model of landscape inherent to SimCity. The concept ran afoul of the politics of the Nazi era, as the Nazi logo was on the tail of the airship, and even if they had removed the logo, people would have associated the ship with the Nazi era.

Even though this experiment did not move forward, it gave Will and Jeff a hunger for expansion and diversity that led them down the path toward taking Maxis public. The first step was to seed the company with some venture capital. The next was to bring in a top manager with a business background and Disney experience. They moved into the sixth floor of a new corporate office block in Walnut Creek, a fast-growing satellite town in the San Francisco Bay area. Maxis went public in the middle of 1995, raising $35 million from the offering, and reported $6 million income for their first public year. From the outside they looked strong, but the treadmill of being beholden to the shareholders and to Wall Street was starting to cause some anxiety on the inside. Jeff Braun wanted a break from the intensity of eight years of growing the company and started to phase himself out of day-to-day operations. Sales of SimCity 2000 were starting to decline. What were they going to do next?

Will embarked on developing a game called SimCopter, where the players could fly a Schwitzer 300 helicopter around a city that was exported from SimCity. "You are flying this rescue helicopter around a city, and you're rescuing people and putting out fires and chasing criminals." The idea was fun, but time

pressure was increasing, and the resources at Maxis were being spread impossibly thin. The new management insisted on shipping four games by the end of 1996: SimTunes, SimCopter, SimPark, and Full Tilt Pinball. The stress levels for the developers shot up, and although they did manage to ship something resembling a finished product for all four games, nobody was happy about all the corners that were cut. Will was particularly disappointed, as he felt that the design for SimCopter was coming along nicely, but it had to be released before it was ready. Poor sales for all four games proved the point.

The situation only got worse in 1997. Maxis tried the acquisition route, buying a small game company from Texas called Cinematronics to develop dungeon adventure games such as Crucible. They also tried children's software, a sports brand, and even full-motion video, with a game called Crystal Skull featuring a star from the TV show "Miami Vice." There was an atmosphere of frenetic experiment without enough resources to make any single effort successful, and morale plummeted. In midyear they reported losses for the previous year of nearly $2 million. In desperation, the management turned to Will to develop another version of SimCity, hoping that an upgrade with three-dimensional graphics would provide a road to recovery, as 3D graphics were the newest fad in the industry at that time. Unfortunately, when Will analyzed the available technology, he discovered that 3D was not yet ready for the microscopic details of cities and landscape that were essential to SimCity. The management did not want to hear this bad news and insisted that they go forward with a 3D implementation, leading to the display of an embarrassingly inept version of SimCity 3000 at a trade show. They knew that they would ruin the reputation of the Maxis brand if this version were to be released.

Enter Electronic Arts, the dominant interactive entertainment company in the industry. EA had been making overtures to Maxis for some time, as they were looking for ways to improve their offering in the PC market, but Maxis executives thought of them as competitors rather than saviors. By mid 1997 the prospects for Maxis were desperate enough for this attitude to change, and

negotiations started. Electronic Arts acquired Maxis for $125 million in stock, but Will was very worried about the deal. He knew that there would be layoffs, and his experience with professional management had so far been a bitter disappointment. EA appointed Luc Barthelet, a straight-thinking and straight-talking Frenchman, to run Maxis as general manager. Luc took a fresh look at the people, resulting in the removal of almost all the top-level management and sales staff. He took a fresh look at the portfolio and declared a focus on "top ten products," causing quite a few of the development staff who were committed to second-tier products to leave. He cut back to a few development teams and divested Cinematronics, leaving a core development staff of the highest caliber.

He brought Lucy Bradshaw with him to focus on SimCity 3000, and together they took a long, hard look at the progress so far. They canceled the problematic 3D requirement and focused on improving the game-play experience from SimCity 2000, building on Will Wright's successful formula, enhancing the maps and zoom features, as well as adding more sophisticated parameters. They showed the game to a positive reception in 1998, and with the EA purse behind them, they were able to wait until it was satisfactorily finished in every detail before releasing it in February 1999. It was soon at the top of the charts.

■ Sims wallpaper

Image
Courtesy of
Electronic Arts

The Sims

Luc Barthelet realized that Will Wright was probably the best game designer in the world but that his talent was being frittered away, without adequate focus or staff. As soon as SimCity 3000 was safely under Lucy's leadership, he started a search for the best possible talent to work with Will, and set him up with an open-ended brief to create the next innovative leap forward. Will had been eager to develop a new game that was about people and social interactions, based on contemporary life. He explains:

- Lucy Bradshaw
- Luc Barthelet

> Most games are striving to get as far away from contemporary life as possible, wanting to be fantasy, science fiction, or military, or whatever. If you go to a bookstore and look at what the books are about, you have a few books over here about military history, and you have a few over here that are fantasy books, but the majority of the books center around contemporary life. It's the same with prime-time television. You go into a software store and it's the exact opposite; there's almost nothing about contemporary life.

In a 1994 interview in *Wired* magazine, Will said:

> I'm hoping to strike out in a slightly different direction. I'm interested in the process and strategies for design. The architect Christopher Alexander, in his book *Pattern Language*,[20] formalized a lot of spatial relationships into a grammar for design. I'd really like to work toward a grammar for complex systems and present someone with tools for designing complex things. I have in mind a game I want to call "Doll House." It gives grown-ups some tools to design what is basically a doll house, but a doll house for adults may not be very marketable?[19]

How wonderful for Will to be able to focus on this idea that had been in his mind for so long, and to have such a good team to move it forward. By this time the concept had matured beyond the doll house metaphor into The Sims, a game that would build on the processes and strategies that people use in everyday life. The Sims is about social interactions among people. You create characters and make them do things. It is like writing your own soap opera, setting up situations for stress, or conflict, or love, and then playing them out. As you move up the levels of the game, you can move from mundane shopping trips and visits to the bathroom, to design clothes for your characters and places for them to live. It soon becomes a hobby:

> When SimCopter completed, I started building a product team around The Sims and pursuing that idea in earnest. The Sims has had a level of success that is just amazing. At some point we realized that it was the best-selling personal computer game in history. We were reaching a much broader demographic, across gender, across age, across computer experience. We had a lot of very casual players who did not normally play computer games.

A frequent vector for The Sims to spread would be that the hardcore gamer, usually male, would bring home the game and play it, and their spouse, or their sister or girlfriend, would watch them, and then say, "That looks interesting," and they would start playing it. There was also a very wide age range from ten-year-olds to fifty or sixty. A lot of grandparents would play it with their grandkids. We were actually hitting a group of people that ten years before would not have been online—they would not have been subscribing to CompuServe—but by then they had Net access.

The original idea for The Sims was to make a doll's house that boys would want to play with and a strategy game that girls would want to play. The intersection of those two gives you a strategy game happening in a doll's house.

We noticed that when we were designing The Sims, a certain degree of abstraction in the game is very beneficial. You don't actually get very close to the characters. You can't quite see their facial expressions, but everybody in their mind is imagining the facial expressions on the characters.

In computer game design, you're dealing with two processors. You've got the processor in front of you on the computer and you've got the processor in your head, and so the game itself is actually running on both. There are certain things that the computer is very good at, but there are other things that the human imagination is better at.

The Sims probably has more sex than most games out there. It's PG sex and it's more kind of titillation than realization, but The Sims is basically in a social space, and it's about the way these people relate, and they get married, and they can have kids. They can hang out in the hot tub together, and they can play in bed.

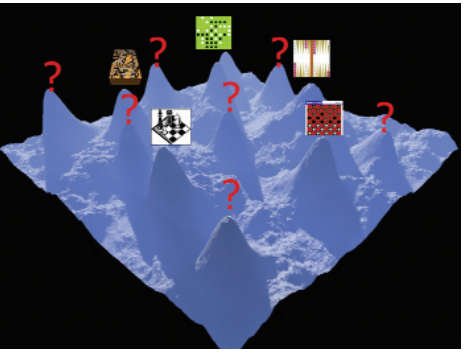
A lot of players will do experiments on the Sims, to the point of torturing them, or seeing what it takes to kill them, or seeing how upset they can get them. It turns out that the people that are doing these clinical experiments on the Sims, on their psychology, turn out to be more female than male.

A lot of games that allow user customizability only do so in a very difficult granule, like the first-person shooters. You can write mods for them, but it basically involves C code and knowing how to program. With The Sims we have all these levels that you can customize. At the simplest level, you can make a new costume, and all you need is a paint program. At the next level above that you can make a new object and it's a bit more involved.

Doll's house play kit
A degree of abstraction
PG Sex
Customized Experiments

The Sims was released in 2000, and since then Will has developed an online version. The ease with which people can create unique versions of people, their objects, and environments, made it an ideal game for an online community. The game itself is interesting and compelling, but the community that built up around it brought it to the next level. People can upload their designs, share them, and have databases online where they collect things that they have created.

The collections are made more interesting by the intelligence of the inanimate objects in the game. Inspired by the work of Christopher Alexander, Will embedded the behavioral rules for good architecture into the elements that make up a house, so that a balcony is an appropriate width for example. This makes designing a house in the game both easier and more successful, so that the open-ended quality of the game is not entirely without the wisdom of experience. The bylaws of architectural structure and object behavior are built into the individual items. Another way of thinking about this is that the objects in the game are designed to be intelligent, so that they can attract both the players and the characters in the game. This releases the characters to concentrate more on their emotionally driven behavior, such as falling in love or violent disagreements.



■ A landscape of play

The Landscape of Play

Will describes gaming as a landscape populated by mountain peaks. One peak is media-based role play, with a story line and a strong plot, for example adventure games such as Myst. A second peak is about skill and achievement, including sports games and first-person shooters. A third peak is about creative simulation, where people develop a hobby and build communities around their hobbies. Another peak is based on strategy, where simple decisions lead to entertaining consequences and situations. You can map the position of a particular game in this landscape and see the strength that it has relative to competitive titles:

The genres that are currently popular are peaks on that landscape. These are areas that prove to be fun, that someone found in all the possible game-space. What happens generally is that somebody discovers a peak, and it grows and grows. Maybe it's real-time strategy, then everybody else says, "Oh, there's a peak over there, let's go and design a game like that."

In fact, there are thousands of other peaks that nobody has explored. Occasionally you'll see an unusual, groundbreaking game jump out in the middle of nowhere, but it usually fails, not because the concept was bad, but because the execution wasn't good enough. The Sims was kind of waffling between simulation, strategy, and a role-playing game. It couldn't decide which peak to live on because really it was a new peak somewhere among the three. Most of the game sites eventually decided it was strategy, so they put it in strategy, even though it is a simulation, and even though it is very much about role playing.

A lot of games are built around a movie model, where there's a beginning, middle, and end; perhaps there's some dramatic climax, or you're defeating evil. The Sim games are more like a hobby where you kind of approach, and you have a shared interest with other people, and you can take the aspects that interest you most and really focus on those. With an electric train set, a lot of people build a model and are totally into the scenery, or making sure the mountains are perfect. Other people are into the switching logic on the track, or the village, or the actual trains that they collect, so you can come to a hobby like that with your own specific interests, and you can really focus on that, and customize the hobby to yourself.

I am interested in developing metrics to look at a community for a game, and figure out where it is positioned relative to this landscape. You can learn a lot if you watch a person playing the game and apply the metrics. You can predict what they would enjoy, and what advancement ladders they are aiming for in the game. You should be able to find content that would be interesting for that person, and download it into them transparently. It could even be a peer-to-peer transfer like Napster. Then as they play the game more and more, the game learns what they enjoy and offers new content, perhaps new characters in the game, new objects that they could buy, and new situations.

When people play these games, especially the open-ended games, they are in fact creating stories. Whatever happens to them in the

game is the story, so that the path that they take through this game is defining some kind of story arc. The computer could start helping to support that story if it could recognize the arc, based on the experience of watching a million people moving through the game. For example, it could see that you're buying a lot of spooky things and you're making a haunted house, and then it could start collaborating with you on that story. It might even test you in the game, so if your character walks into the next room, and it can't decide if you're doing a horror or a comedy, maybe it could put a cream pie and a chain saw in the room, and wait to see which one you pick up. I can imagine a system where the player becomes the game creator, and we're providing them the tools.

With The Sims online right now, that's one of the concepts that we're pursuing. In The Sims, you have a build mode. You can buy new objects, place them wherever you want, put up walls, and design a house. We're also doing a lot of incremental objects, at a fairly low level, that are game components that the user can place. These are things like dice, or one-way doors with secret buttons, or conveyor belts. They are things that in combination you can use to create a lot of different games. In some sense we are hoping that the build mode in The Sims becomes a kind of game creation system, and then the real competition in this online game will be who can make the best game using these components.

Designing Games

A STARTING POINT for designing a game is to engage players in deciding what their goals are. They may know in advance, if they've seen the game being played or heard about it from a friend. If it is a driving game with stock cars, they know that the goal is to win the race. With the Sim games, the options are much more open-ended and diverse. In SimCity, the game designer doesn't tell the player the exact goal. There is no instruction to build the biggest possible city in twenty years, or to make the residents happy. Each player decides what his or her goal is; that decision is as important as anything else that happens in the game. Players might say, "I want to see how big a city I can build," or "I

want to see if I can eliminate crime in my city," and then they pursue that.

The game designer also has basic choices about speed and scope at the beginning of each project. Will describes this as the "Granularity of the interaction, which is often how you are actually making a decision that's going to alter the outcome." The "choose your own adventure" books have very large granules, where you may make one choice in a chapter. The first-person shooters are the finest granules, where the software is sampling the input device sixty times a second.

There is also the significance of the space that the user is navigating while playing the game. Some games, like the Sims, have very open-ended spaces; others, like the shooters, have very constrained spaces. An analogy for the dramatic interest or challenge associated with that space is trying to climb a hill to get to a destination on top. Some hills have very smooth, gradually ramped sides that are easy to walk up, and others have cliffs that are very hard to climb. How quickly does the game get difficult? Is it smoothly ramping up in difficulty, or does it have dramatic moments with real significance to you?

The pleasure in playing a game is influenced by the structure of the feedback. When you first play a game, the very first thing you encounter is a five-second feedback loop between you and the computer, based on the control structure. The controls must be understandable to get you past that first potential barrier, and have to be fun to use or you will lose interest in the game. At each one of these interaction loops, you may succeed or fail. Once you succeed at the first feedback loop of five seconds, you can start playing at the next loop, which takes longer than a minute. Once you are successful at that one, then you can go to the next one, and so on:

> Frequently the really important thing for the designer to concentrate on is not the success side of these interactions, but the failure side. If you can make failure a big part of the entertainment value of the game, people get a blast out of it. You look at kids playing with blocks; they build a tower and it falls over and they laugh, and they build it again and it falls over. At some point, if they build it and

they run out of blocks, they'll knock it over on purpose. This is designing the playability of the game.

Look at Pac-Man for example. With Pac-Man you come up to the machine, and you have buttons, and you start pressing the buttons. Very quickly you learn the mapping between the buttons and the movement of your character on the screen. If you haven't learned that, the rest of the game is going to be unplayable to you, but you learn it very quickly. Then you learn that these guys are chasing you and if they touch you, you die. Now you know how to move, and you know that these guys are going to eat you. Then you're starting to play the game a little bit longer and you're able to avoid the guys, and the next thing you notice is, "Well, I'm not going to progress anywhere until I eat all these dots." At each one of these stages success buys you access to the next level of game play. When you're playing the game, you're using all three of those overlaid. I'm moving the guy with my skill of pushing the buttons; at the same time I'm avoiding the bad guys trying to eat me, and thirdly I'm trying to eat all the dots while doing the first two things.

With a game like The Sims, the very first level is, "How do I make my character move around and interact with objects?" You learn that you click on an object, and it comes up with a menu and you select an item. Then once you know that you can move your character around and interact with objects, you start noticing that they have needs. They need to go to the bathroom, they need to eat, and they need to have social interaction with other characters. Each of those has a failure state; if they don't eat, they'll starve to death; if they don't go to the bathroom, they'll soil the carpet. At that point you start learning to keep all of the needs in the green. Once you've done that, you've actually bought some free time, so you can start pursuing the economics of the game. Every game has these overlapping loops of interaction. We're mapping these complex things into your instincts and your intuition.

- Gardening analogy
- Train-set analogy

Every game that Will Wright has created seems to have combined an academic and a metaphoric inspiration. SimCity was triggered by Jay Forrester's theories about urban dynamics and came to life with mixed metaphors of elaborate train sets and gardens:

> Most people, when I tell them that SimCity is really about gardening, they understand it, but they've never thought about it. In fact you're

tilling the soil, you're planting the seeds, and wonderful things pop up, and you have to weed the garden. The process of playing SimCity really maps much more to a garden than it does to a train set.

The Sims combines the inspiration of Christopher Alexander's *Pattern Language* with the metaphor of the doll's house. Will uses the metaphors to help his thinking flow, and also believes that the result makes the players more comfortable with the process of playing the game, although they may not realize it at the time.

New technology dictates limitations and opens opportunities for game designers. Computer graphics capabilities have dominated the industry in the past, but as the visual possibilities approach realistic appearance, the balancing qualities of motion and sound design will be more significant. Competition has been driven by the development of the technology for the highest frame rate, the graphics cards, and chips. We are now to the point where you can buy a $200 or $300 console with the processing power that only military flight simulators had twenty years ago. Now the weakest element is much less likely to be graphic and much more likely to be behavioral, so the behavioral technologies are going to be a big focus over the next ten years.

Will sees the augmentation of reality as a significant opportunity and possible next step for the industry:

The heads-up display thing just never went anywhere, and I think you have to actually try one out to realize why. In fact the immersion is less complete using these things than it is in a dark room, at a high frame rate, with DOOM on your computer in front of you.

Now I think that the augmented reality idea has potential. This is the idea that there are computer overlays on top of the real world. For example, I might be wearing a set of glasses that can project computer images, and mix them with the real world.

I can imagine something, probably more like fifteen or twenty years out, where you have two kids wearing these things, and they're out playing in the dirt. They're talking to each other, and all of a sudden, little army men appear in the dirt running around having battles. The kids are playing in the real world, but with this computer partner helping their imagination. So the two kids are saying, "I'm

> going to have a fort here, my fort's over here; I just sent five guys down that hill." In fact both kids are seeing the five guys running down. It's a shared point of imagination for the two kids, so that their two imaginations run in sync. The computer in that sense is a third playmate. If you look at little girls playing with a dollhouse, that's pretty much what they're doing; they're saying, "This'll be the mummy, this'll be the daddy, let's have this happen," so they're both building up this whole other world through their imagination that's overlaid on the actual artifact of the doll house.

What can we learn about designing interactions from Will Wright? First we can learn about how to play. Games only survive if they are enjoyable, a characteristic that is sadly missing from so much interactive software. We can learn from Will's explanation of how to engage the imagination of the players and build in a series of experiences that make them successful a little bit at a time, while keeping the path toward another step visibly open. We can learn that the controls must be fun to use, so that you can immediately understand how to use them but can also feel yourself improving as you practice and gain skill. There needs to be a path from inexperienced to expert that allows you to gain fluency and the rewards of skill without having to stop on the way and start again. This usually involves controls that have a direct effect on the outcome, like a steering wheel or joystick, but could possibly be more cryptic and mysterious, like a typewritten instruction or numeric code, if the context of the game makes the indirect quality part of the play.

These questions of engagement, feedback, and controls are all about designing the game right. What about designing the right game? This is where Will's patient perseverance and thoughtful analysis are so unique. He shows us how to think strategically about how to position ourselves in the overall landscape of play and how our design should relate to the other designs that are around it. He shows us how inspiration from academic curiosity and research can inspire an idea of what the next right thing can be. Whether it's Jay Forrester's urban dynamics or James Lovelock's Gaia hypothesis, you can feel how these abstract ideas

inform his approach to the design, while at the same time giving him great pleasure in discovery. He ferrets out these authorities because he is fascinated by the subject matter, and uses his creativity to capture the qualities of ideas that will be relevant for his game.

He also shows us how to use a simple metaphoric idea to retain a focus on what is right. The ideas of gardening for SimCity and doll's houses for The Sims are used to test each new notion for the qualities that define the right game. Coming up with these simple ideas in the first place is in itself a form of synthesis that can feel like a creative leap, but is probably formed from a complex subconscious set of experiences and intuitions. The ability to do this well is a mark of a great designer.

We can also learn about the pleasures of designing code, the software that makes the game exist. Will reveals his delight in a good algorithm when he describes the beauty of unraveling many possibilities from the simplest of structures:

> One of the real measures of a beautiful game design, I mean the aesthetics of the design itself, goes back to the question of emergence. You ask yourself, "What is the simplest possible system that I can build, that for you is going to decompress into the most elaborate set of possibilities?"
>
> I'm compressing a large set of possibilities down into a few algorithms of computer code. When I hand you that computer code and you start running it, you can then decompress it in your play experience to this rich set of possibilities. If your experience is very unique relative to another player and very meaningful to you, but still based on this very simple rule structure that I built—that to me is aesthetic elegance in game design.