VIDEO GAMES AND LEARNING

Teaching and Participatory Culture in the Digital Age

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CHAPTER 2

Ideological Worlds: What Makes a “Good” Educational Game?

Chapter 1 argued for studying games as a new site for learning. This chapter asks, *What makes a good educational game?* And it builds on Chapter 1 by using game series such as *Civilization*, *SimCity*, and *The Sims* to discuss important educational issues such as oversimplification or bias. We often see games’ educational value as being in their realism or complexity, but good games find “the game in the content.” They inspire interest, creativity, and social interaction. Later on in this book, we’ll explore how to design such games.

**INTEREST-DRIVEN LEARNING**

“I’m tired. I’m heading home,” David said. It was still early, maybe midnight. I asked what was up. “Oh, nothing . . . We were out late last night. Maybe I’ll just pack it in.”

“That’s cool . . . See you back at the place,” I said. What I was really thinking was: If I waited a few minutes, I could sneak out of the party and squeeze in a few turns of *Civilization* on the house computer while he slept and my housemates “Smurf” and “J-Man” remained at the party. You see, there was only one computer for the four of us, and Smurf owned it. Ever since he’d installed *Civilization*, negotiating “Civ time” was an issue. Multiple Civ-addicted college students sharing one computer is a bad, bad scenario.

I don’t know why I didn’t see it coming. When I escaped home, I wasn’t greeted by an unoccupied computer but instead by David, who was knee deep in fighting the Aztecs.

“What are you doing!” I asked.

“What are you doing!” he challenged back.

“I guess we’re geeks,” I conceded. Rather than fight, we agreed to take turns before Smurf got home.
Soon enough, an angry Smurf charged through the door. "You guys just left me there. Get off my computer. Go to bed!"

We sloughed off to the living room and fired up Tecno Bowl. It was kind of mean—and awfully dorky—for us to abandon friends at a party for a computer game. After a few minutes, though, we realized he was a little too angry. We peeked back into Smurf's room, only to see him playing Civilization.

It's hard to capture how groundbreaking the first Civilization game was when it was released in 1991. In Civilization, players choose a civilization (Egyptian, Russian, Iroquois, American, German, etc.) to lead for 6,000 years (if successful). Through military might, cultural domination, diplomatic victory, or, my favorite way, a "space race victory," the goal is to be the first civilization to colonize a planet in the Alpha Centauri System.

The game is enormous. Starting in 4000 BC, players begin with just a settler, which is used to start a city (and hence a civilization). From there, players choose which technologies (such as the wheel or pottery) to research, add more settlers to improve the land (once the appropriate technologies are discovered), and build city improvements (such as temples or granaries). Part of why Civilization works is that you start small: a settler and a small plot of land. Each game evolves through your choices regarding which technologies to pursue, how to balance military strength versus infrastructure (a classic "guns vs. butter" problem), how to expand, and whether to go to war to protect your interests. My favorite part is building wonders of the world (such as the Colossus or the Great Wall of China). All the while, players compete with computer-controlled civilizations for these scarce resources. For a kid who cut his teeth on Pac-Man, Bard's Tale, and Pirates!, Civilization was a revelation.

Civilized together themes from geography, economics, politics, and history, enabling me to identify holes in my understanding, such as, "What was happening in sub-Saharan Africa during the Roman Empire?" These connective questions come naturally to a Civ player but are rarely interrogated when topics are presented separately in school. At the time, I was an undergraduate studying social studies education in the Western College Program at Miami University. Between my teacher James Douglas's class and Sid Meier's games, I developed an interest in history and education.1

1. My Pirates! episode got me off to a good start with Mr. Douglas. I was such a dork that in my senior year I became a teaching assistant for his AP history class so that I could observe his teaching methods. For example, when someone asked, "Can I go to the bathroom?" he would say, "You're 17 years old. Don't you feel demeaned asking permission to do what any 4-year-old can do on her own?" This bathroom example illustrates how our system fails to give freedom and demand responsibility from students. Many other educators make similar observations; one of my favorites is Ted Sizer's (2004) Horace's Compromise.
I could have opened this chapter by discussing late-night SimCity sessions. Some evil colleague installed SimCity in our Mac lab at college, and it sucked away hours of our lives.

Civilization built on these compelling facets of simulation games but added a competitive dimension. In SimCity, you compete with the game model itself, trying to build your city according to whatever goals you choose. One common goal is to build an ecofriendly city. As players attempt to build public transportation or parks, they might run low on cash. To raise cash via property taxes, they might create a new subdivision. This new subdivision might create an increase in crime if it is not properly policed, so more money is needed... and so the game continues. In many respects, the joy of SimCity is monitoring the "artificial life" of your creation as it grows and evolves over time.

My first academic exploration of games came in Computers and Cognition, a course taught by Christopher Wolfe (who became my advisor). We played Smithville, Hidden Agenda, SimAnt, SimEarth, SimCity, and Net Trek (awesome), read theories of hypertext, and discussed constructionist learning theory (Wolfe, 1995). Constructionism, associated with Seymour Papert (1981), is the idea that we learn best through constructing understandings through personally meaningful projects. I still recall my first assignment for Dr. Wolfe, which was to build a class hypercard stack on constructivism. Each of us took a subtopic (a nice, parsimonious assignment, I'd say) and then built our own group project. My friend David Simitis and I made an enormous hypercard stack called "The Hitchhiker's Guide to Western," which lived on the group's computers for years after we graduated. We read newsgroups such as alt.barney.dinosaur.die.die.die. We got email accounts and signed up for the grunge-L list. As J. C. Herz (1995) documented in Surfing on the Internet, we contemplated life in a world in which people might access—and contribute to!—whatever information they wanted from their desktop.

The field of digital media and learning formed because my generation played games and experienced participatory culture as students. We remember discovering the Internet and realizing that it changed everything (even if we didn't quite know how). Not everyone gained 12 hours a day or even owned their own computer, but almost everyone played educational games, tried programming games in BASIC, and authored content on the web. There's a saying that we study the technologies we grew up with because they shape our basic experiences and expectations. Today's graduate students are gaming and Internet kids, and tomorrow's may be the mobile generation.
This story is an example of interest-driven learning. Playing *Pirates*! led to my interest in history and my identity as someone who was interested in education. Next, I found a mentor who nurtured that interest and suggested ways I might extend it. From there, I discovered *Civilization* and further delved into this interest. I was lucky enough to pursue these interests in both courses and graduate seminars and through my apprenticeship at the McGuffey Foundation School (discussed in Chapter 5).

So for many from my generation, the question “Can you learn with games?” is moot. The real questions are “How do we make good learning games?” and “Can games help transform education?”

**WORLDS WITH BIAS**

Video games are unique in that they are participatory. Games are complex systems that invite us to *play* with them. They are dynamic in that they unfold over time; most games evolve in response to our choices. Many games that are of interest to educators are *simulations*. They aren't *perfect* simulations, and it's not always clear what they are a simulation of, but very often they try to create some *experience* for the player. The real learning occurs through the transformations we have through playing and then engaging in related practices (viewing gaming forums, playing with friends, and so on). Let's return to *Civilization* as an example.

Educators often raise two issues with *Civilization*: “Who designs it (and do they know anything about history)?” and “The game is overly simplified and distorts reality.”

**Who Designs It?**

This answer is straightforward: game designers. They are entertainers above all else. Firaxis, the makers of *Civilization*, are not professional historians, scholars, or educators. Game developers such as Sid Meier and Will Wright are classic Renaissance (mostly) men; they direct the programming, graphic design, and sound effects on many games, working with teams of developers. Sid Meier, the creative genius behind *Civilization*, builds historical games (*Civ, Pirates*, and *Railroad Tycoon*), military strategy games (*F-15 Strike Eagle, Silent Service*), and whimsical games (*Sid Meier's SimGolf*). He also plays the piano—and particularly enjoys Bach—and sings in his church choir. Subsequent *Civ* designers share this breadth of interests. Brian Reynolds, lead designer of *Civ2*, studied philosophy at Berkeley. Jeff Briggs, lead designer of *Civ3*, has a PhD in music composition and is a history buff. Soren Johnson, lead designer of *Civ4*, has a BA in history and a master's in computer science from Stanford.
Civilization's designers iterate on its flaws over time. For example, Civ3 didn't handle slavery, religion, or disease especially well. No one wanted to touch slavery for the obvious reasons, and it seemed similarly impossible to do religion without offending somebody. It's also not fun to have 95% of your civilization die from diseases that are out of your control. In Civ4, designers included slavery as a labor system and religion as a tool for generating happiness and making money. The slave trade, which was so important to colonialism, still isn't realistically represented, nor are diseases.

Civilization's designers readily acknowledge its simplifications. Some ideas (such as the importance of raising sheep for wool) are excluded to keep the number of resources manageable. Others are simplified so that players can see the effects of their actions. If the model gets too complex, you can't observe the consequences, and then it is not entertaining or educational. Many educators make this mistake (let's include everything so that it's realistic), which makes a model less useful for learning. We don't want a 1:1 map of the world; we want a model to illustrate ideas. This is why many science researchers use simplified models.

One way that designers address these imperfections is by shipping the game with robust editing tools. If you don't like the stock game rules, change them yourself! People add resources like wool, create their own civilizations, or build "total conversion" mods, turning the game into a Lord of the Rings map, for example. Some even use Civ's tools for historical modeling.

Inaccuracies and Simplifications

This main lesson—models have to be simplified if they are to be understood—is important for both game design and for educators. Many scientists distinguish between two kinds of models: idea models, which illustrate key concepts (such as predator-prey relationships) and predictive models, which predict events. No one would argue that Civilization is a good predictive model; global leaders shouldn't make policy decisions based on playing Civ.

However, Civ does enable players to see history and geopolitics from different perspectives. For example, try to wage a military-cultural war against a far-off civilization with ancient traditions and see how far you get. Or play a closed, theocratic government and watch as your economy stagnates. In fact, theocratic civilizations almost

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2. A notable exception is Sid Meier's Alpha Centauri, designed by Brian Reynolds. Brian's interest in philosophy comes through as players choose among different cultural values in deciding how to colonize outer space. Here, science fiction provided(295,354),(970,400) for exploring cultural and philosophical issues.

3. Although there are technical differences between models and simulations (models are static; simulations, dynamic), I use the terms interchangeably here.
always have little scientific advancement and often end up going to war to defend their interests. One big idea in Civ is that new technologies enable you to use new resources, creating economic benefits for advanced nations. Civilizations that invest in technologies reap the benefits; iron isn't valuable until you discover ironworking. Today, new resources may become valuable as we discover nanotech or turbine technologies.

These relationships aren't scripted into the game; they are patterns that can be observed after repeated game play. You may learn them not from programming the game but instead by studying the emergent properties of the model. The learning is addictive. Of course, we want students to test these inferences on other representations of history. We want conversations between historical observations and game play, something that games invite and sustain and which can be scaffolded in classroom discussion.

**Bias in Games**

As you read that last section, hopefully you thought, “But isn’t that model biased?” The answer is, “Of course!” In fact, this bias is its biggest strength. First, remember that all representations of history are imperfect. Simplification is at the heart of historical interpretation; books include some facts and leave out others, while films tell stories from particular perspectives. Games happen to frame history according to certain variables (and not others).

History is simplified in even more subtle ways. Historians always choose a starting date and an ending date to their stories; if you were to move those dates forward or back a few years, the story would change. Same goes for geographic boundaries. As my history professor Alan Karras taught, U.S. history looks different when it’s not divided by the familiar periods (colonial history, Civil War, and so on) because the time period you choose to study leads historical accounts toward “inevitable” events (see also Karras & McNell, 1992). Similarly, the history of European colonization looks different when the Caribbean is included. Many historians cross such traditional boundaries to find fresh insights.

During my brief graduate career in history, I was shocked by how many books there are on any topic. I had to read over 50 books on the history of the American South for just two courses, and even then, professors said I was only just getting a flavor for the topic. Any serious historian would read hundreds more. The same is true of political figures; think of how many Lincoln biographies there are. You can only “grok” a topic after looking at many accounts of a phenomenon.

So all representations have their slant, but games uniquely force players to confront many of these assumptions directly. The most obvious example in Civ is how it models foreign relations. In Civ (as in life) more advanced civilizations
strong-arm less-developed civilizations into sharing precious resources, giving access to military space, or joining in foreign conflicts. They might give away technologies or food in return for a friendly United Nations vote. Every player knows this (and often curses it). It’s impossible to play Civ without picking up on this bias, although to what extent the player relates this to U.S. policy depends on the context (including their preexisting beliefs and purpose for playing).

Seeing a game unfold also reveals what is missing from a game. In realistic maps, Native American civilizations will develop large, advanced settlements. With no diseases such as smallpox to wipe them out, they stay populated, which changes history dramatically. How players interpret these causes (and decide to pursue the questions that arise) depends on players’ goals, knowledge, and the gaming context. When I teach with Civilization, I use this missing feature as a teachable moment to discuss the size of Native American civilizations (which most people underestimate) and the importance of diseases. When Civ play is framed as a colonial simulation, students often make interesting observations:

1. “Old world” civilizations can become part of a vast trading network spanning from China to Egypt to England. This network trades technology, resources, and economic goods, not to mention diseases, so that they advance more quickly than the Americas or sub-Saharan Africa.
2. The “new world” doesn’t have elephants, camels, or horses. This means that there is no natural “cavalry unit” and spells big trouble should armed conflict arise.
3. Native American civilizations are much larger than students ever realized.

How Civilization’s model is biased is the subject of academic debate. I’d say that there are at least four groups of bias:

1. Bias toward management. This one is kind of obvious (and was first raised by Friedman, 1999). Because Civilization is a game in which players affect the world, a well-managed civilization does “better” than a poorly managed one. There are good arguments on either side of this issue, but suffice it to say that the bias is there. What meanings players actually make of the bias is different.

4. For an analysis of values in the fate of civilizations, see Jared Diamond’s (2004) Collapse, a book that argues that many civilizations have failed because they destroyed their local ecology. Other world histories (including Diamond’s Guns, Germs, and Steel, 1999) frame history largely as the result of conditions that civilizations are placed in. Within Diamond’s work, this apparent contradiction is largely a matter of time and geographical scale; in the short term, relatively isolated societies make decisions that lead them to flourish or decline. Over millennia and across broad regions (e.g., an entire continent) these differences tend to wash out.
question altogether. The drive to see the world in terms of management may be an inherent bias resulting from playing games, just as the narrative structure of books may invite us to see the world in terms of simple, linear causality and watching films may lead us to emphasize the importance of personal narratives.

2. *Progress and science*. The standard rules of games are biased toward scientific progress being good. New discoveries make things better. The story of most Civilization games is that new technological discoveries provide advantages over other civilizations. There is little opportunity to ask if this really is progress. It’s an interesting question because in “real history” less-advanced civilizations that adopt new technologies tend to get attacked or assimilated. After all, there aren’t many hunter-gatherers running around.

3. *Critical-Marxist orientation to power and conflict*. Despite the many “critical” reads of Civilization as being biased toward Western notions of progress (see Schut, 2007), there is an undercurrent of power coming from material goods and the use of such power by governments to obtain and secure resources. If a civilization controls resources but has inadequate military, economic, religious, or diplomatic power, it will be attacked, which is not exactly how manifest destiny was taught in my textbook.

4. *Geographical materialist theory of history*. From an educational perspective, the most interesting bias of Civilization is that everything emanates from geographical positioning. For example, start a civilization in the Nile Valley, and it will grow fast and then suffer from diseases. If they survive, the Egyptians must confront the Babylonians to the east and the Greeks to the north, which requires military spending. Expanding south on the Nile toward Kenya means assimilating or conquering African tribes and obtaining horses and bronze. If the Egyptians don’t obtain horses and bronze, they stand little chance against Greek hoplites and Roman legionnaires. Almost every game played on this scenario unfolds similarly, and players start to infer rules for how history plays out on broad time scales.

Because these biases reveal themselves to the player (who is often yelling, “This is unfair! I hate the Greeks!”), most players learn them.

**CIVILIZATION AS A GEOGRAPHICAL MODEL**

Once you accept that bias is inherent in the game, Civilization is good for thinking about how geography and broad policy decisions (such as guns vs. butter) have an impact on history. To explain, examine figures 2.2 and 2.3 from Civ3. Figure 2.2
shows the map players see most of the time. The map shows physical geography, natural resources, political geography, and human modifications to the environment, such as cities, roads, farms, and railroads. (Incidentally, teachers love that playing Civ involves staring at maps all day. As one student put it, “Civ is a boring ‘natural resource’ diagram from your textbook come to life.”) Figure 2.2 shows how these resources are gathered and manipulated via cities.

Geography undergirds game play as players study the map to infer the strategic implications of these elements. It matters, for example, that the Nile is long and
snaking and that there are horses, bronze, and gold to the south, because it affects how cities form. The Sahara Desert also serves as a natural border constraining westward expansion. These lessons correspond to middle school world geography standards.

So the game comes down to one’s ability to gather resources, to amplify them by building structures, and then to make strategic decisions on how to maximize them. For example, if one is on an island, then your number-one goal should be to pursue fishing and sailing technologies (much like the Phoenicians). Conversely, the Persians sit at the crossroads of Asia and Europe and thus are well positioned to control trade routes, so your first job is to build your military to counteract threats from neighboring civilizations.

Remarkably, many historical phenomena are simulated “well enough” through these variables. To be sure, Civ contains some 10,000 concepts that make even the most advanced educational software look embarrassingly simple. Yet the foundations of Civ are straightforward, which Chris Crawford (2003) has argued is at the core of its appeal. A simplified, elegant model is easier for people to understand and much more useful than a “perfect” model that is too complex.

Getting an ideal model “right” so that it is both fun to play and generates insights is the key for both research and education. Idea simulations such as the Lotka-Volterra equations (the basis for many predator–prey models) do not model entire ecosystems. Lotka-Volterra doesn’t predict what happens to a deer population if a particular policy toward wolves is adopted in Yellowstone National Park, for example. Rather, it shows patterns over time and highlights nonintuitive relationships. Lotka-Volterra shows how an imbalanced system eventually results in the predators themselves dying. First, the predators kill off the prey. With no prey left, the predators eventually starve. After the predators die from a lack of food, the prey rebounds. Now, there’s an overabundance of prey, which enables the predator to rebound, and the whole thing repeats itself. (Google it, play with some of the models, and you’ll see.)

So, asking whether or not Civilization is “accurate” misses the point. My argument is that Civ (1) provides a framework tying together world geopolitical history; (2) gives fluency with a model that is useful for analyzing world history on broad time scales; and (3) inspires revisiting, tinkering, and socializing. These same factors make good success criteria for games more generally.

IDEOLOGICAL WORLDS AS FRAMEWORKS FOR THINKING

Games are “ideological worlds” in that they instantiate ideas through implicit rule sets and systems (rather than by telling stories). The word ideological tries to capture that
they are built according to theories of how the world operates (implicitly or explicitly). Every game makes value judgments about what is and is not important. I prefer the word world to system because games are not (usually) abstracted rule systems but worlds rich with representations. These representations might be of cities, resources, and armies, such as in Civilization, or automobiles, city streets, and their denizens, such as in Grand Theft Auto. Although it's useful to look at games as systems, the term system shortchanges the role of graphics and sound in how players infer meaning from games. Visual representations are a critical part of meaning-making.

Games and Simulations

Games differ from simulations in that they give roles, goals, and agency; elicit fantasies (including transgressive play); and design experiences to manage complexity and learning. Dan Norton (2006) sums it up well with the phrase "roles and goals." In the case of Civ, your role is a leader, somewhere between a dictator, a president, and God. This tradeoff between realism (what role do you play in Civ?) and engagement (it's fun to test out your ideas without annual elections) is part of the allure of games. The Senate in Civ2, for example, intervenes on military decisions. Players can avoid this by overthrowing their government and installing a fascist state before going to war. Current versions still penalize players for unpopular wars, but more coherently.

Game designers often say, "It's OK to sacrifice realistic roles if they support players in pursuing meaningful goals." Critics may argue that these simplifications are dangerous, but none of the hundreds of Civ players I've interviewed (some even as young as 8 years old) have ever confused their role with that of the president or emperor (see Chapters 6 and 8). This fictional conceit loses realism, but buys the ability to affect multiple levels of a system. As an educator, I tend to start with authentic experiences (such as being a scientist), which is fine, but also precludes many interesting roles (such as a time traveler).

The latter part of the equation is goals. Games entice players into developing goals. Players' goals are a property of neither the player nor the game, but are a coupling of the possibilities of the game space and the player's desires. Civilization has the capacity for players to do many things, ranging from leading a peaceful global society to waging religious wars to wiping civilizations off the map. Yet players do things all the time that the designers didn't anticipate. Thus, even though Civilization isn't a perfect simulation, its value is in its gameness.
This distinction between games as rule-based systems versus worlds mirrors the “narratology versus ludology” debate that once defined game studies as a field. The debate, in essence, is whether to study games as media or play. Study them as media, and we are inclined to see them in the context of the history of media, which includes books, film, TV, radio, and so on. Study them as play, and they are situated in the tradition of toys, hobbies, board games, and sport.

Games are both media and play. They allow us to play with representations, such as when we play being a gang member who wears a Hawaiian shirt and drives a pink Cadillac in Grand Theft Auto: San Andreas, and to test the rule systems of those representations, such as taking that getup into rival-gang territory.

No one game captures everything perfectly, so ideally we want multiple frameworks for thinking about any topic. Students should experience a variety of theories of history. For example, Civilization deals with history at such broad time scales that “great people” are unimportant. Students might imagine how Civ would be different with a “great man” theory of history (see Chapter 6).

MEANING-MAKING IN IDEOLOGICAL WORLDS

How do we make meaning within ideological worlds? Within game contexts, at least two qualities are important: (1) the learning cycle of a player developing goals, reading the game space for information, taking action in the game world, and then reading games for feedback; and (2) the social experience of participating in particular game communities, which is where much of the reflection, interpretation, and media production occurs as interpretations are debated and legitimized.

Meaning-making within games is a deeply productive act. Players formulate goals, develop plans and strategies to reach those goals, and read the game space to understand what happens—all within a broader social context. Learning has been thought of as an active process for a long time, and if there is one message coming out of the learning sciences over the past 30 years, it is that learners are active meaning makers who create knowledge from experiences. However, learning through game play is about creating knowledge in a way that challenges even our most “student-centered” notions of learning.

Meaning-making is related to particular goals. When first playing Civ, you start with a vague goal, which for me was “play Smurf’s cool game.” What made it cool, from a distance, was its complexity and ability to grip my friend for hours at a time. Next, I was taken by the ability to “replay” history. Could I play as a Native American tribe and fend off Europeans? From there, I developed more specific goals (if I “discovered” Europe, maybe I could strike peaceful diplomatic agreements and
protect myself). Moving forward, I developed more sophisticated strategies (grow quickly and research naval technologies). Every student I have studied has his or her own trajectory (explored further in Chapter 8). For some, an interest in ancient Rome translates to a focus on achieving great wonders, which leads to understanding cultural and economic variables. Others take to naval warfare, which might lead to learning about Vikings.

This process is deeply productive in that players constantly construct goals, strategies, and theories about the game system. You can see the products of these strategies on screen, in how cities grow, how trade routes are constructed, and how military defense systems are built. But there is also the theory production in the player's mind. As designers of educational games, we want to align this theorizing with socially valued forms of thinking, whether it is thinking like a citizen scientist or like an engineer.

Michael Nitsche (2008) provides a useful way to navigate these planes of gaming. The first plane is the game as it is encoded in the box. The second plane is the game that unfolds on screen. There is no "game" without the player. The third plane is the game being played in the player's mind. Will Wright (quoted in Pearce, 2001) argues that from the moment the player looks at the box, he or she is constructing a model of the game. Game play for Wright is simply the process of developing deeper understandings of that model. Understanding this mental plane is critical for understanding The Sims (see The Sims sidebar). I might, for example, play a game based on my family. The people on screen aren't "my family," but in my mind, I am playing my family. The fourth plane is the action occurring in real space (the mouse clicks and so on). This is the "button mashing" plane; those who claim that games are just button mashing are focusing on this interaction (but not really understanding it). The fifth plane is the social plane. This plane is gaming in its social context, which might involve performative dimensions (as in Rock Band) or competitive play.

**PARTICIPATION IN IDEOLOGICAL WORLDS**

So far, we've focused on games as interactions between humans and computers (largely planes 1–4), but this fifth social plane may be most important for learning, and we need to unpack how it drives advanced game play. Consider how The Sims encourages people to be not just consumers but producers of content (something studied in more depth by James Paul Gee and Elizabeth Hayes, 2010). When I first reviewed The Sims back in 2000, I was amazed at how Wright and his team did not include every person, family, or piece of furniture imaginable in the game, but instead gave players the ability to produce and distribute content. Essentially, the team put players to work for them in creating game content. Spore, the design game
in which players design cells, organisms, tribes, civilizations, and planets, takes this strategy even further, as the creatures, vehicles, buildings, and cities that players create through play become the content of others’ games. A key to *The Sims*’ wild success, I think, is that it didn’t try to be all games to all people; rather, it gave players the tools by which they could make unique game experiences that they wanted to play (like having the band the Damned move into their neighborhood and pee on their floor, which happened to me).

**The Sims**

*The Sims*, the household simulation game designed by Will Wright and his Maxis team, is a touchstone example for educators. Proving that popular games don’t need to be violent, *The Sims* is the top-selling PC game of all time. It’s now a multibillion-dollar franchise and has sold over 125 million titles.

Few things are more fascinating than watching and experimenting with people. Many *Sims* players start by modeling their real-life household to see what happens. I was shocked to learn that, according to *The Sims*, my life would be better if (1) I ate breakfast with my family (meeting my social, nutritional, and comfort needs as well as improving my relationships), and (2) I bought a good couch (meeting my needs for more social interaction, comfort, and fun, as well as providing space for relationship building; even while reading books). All kinds of people came to visit when I had a good couch.

Wright (quoted in Pearson, 2001) reports that most players use *The Sims* as an interactive storytelling machine. Maxis provides tools so that players can easily take pictures and post their stories online. Still, playing *The Sims* can be quite transgressive. Sending a housewife in need of social interaction next door to talk to an attractive neighbor feels infinitely more transgressive to me than shooting aliens in * Doom.*

So what is *The Sims*, really? A quick answer is an interactive digital dollhouse with built-in shopping, storybook making, and scrapbooking. Critics note a strong materialist bias underlying *The Sims*; in that better couches, for example, tend to make people happier. The game pokes fun at this bias. For example, the advertising copy for a table available for purchase in the game reads, “This end table will improve your life!” This can lead to some confusion about when *The Sims* is serious and when it is satire. It also raises the possibility that there is a strong materialist bias in the world. Wright (quoted in Pearce, 2001) claims that the game is about several things, including the tension between pursuing material goods in order to make our lives better and the tendency for those material possessions to own us, rather than the other way around.
The Sims isn't the only game that supports player creativity. For years, games have shipped with modification, or “modding,” tools that players use to generate content. What Maxis did was make the line between consumers and producers fluid, so that players could very easily create and upload their own characters, houses, and furniture to The Sims website. For Wright, creating a “smooth ramp between consumer and producer” is paramount. In an interview with Celia Pearce (2001), he says,

I think there are going to be certain types of new media where this is the natural form of interaction. With something like The Sims, it’s meant to be a very smooth ramp. I buy this game and it might be a while before I tune into the web button, but it’s real easy and so I don’t really have to go out of my way to share my experience. As opposed to somebody who’s doing a home page, where they have to actually figure out how to deal with their ISP. Or the film thing, where in fact, I have to actually pull out my camera and start doing work to make the film.

To put this quote in perspective, think of how, in 2000, few people (especially non-gamers) would have signed up for a game and gone online to download content made by strangers. One might also ask, in turn, how many would have felt comfortable creating content. That’s what The Sims did.

The Sims excelled in making this ramp from consumer to producer “smooth,” to use Will Wright’s term. There are simple and obvious ways that one can begin producing content, starting with uploading one’s Sims characters. Next, one might use the game as a story-creating engine by using the “scrapbook” feature. Wright reports that for many people, advanced game play consists largely of using the game as a storytelling engine, and there are wide reports of this feature being used for family therapy.5 At the highest levels, players might actually create custom characters and furniture for The Sims and earn real world cash from other players.

This fluidity of production found in The Sims can also be found in entirely different games, such as World of Warcraft. In WoW, players begin participation in amateur production by downloading user-generated add-ons that are required to participate in high-end gaming practices. As Steinkuehler and Johnson (2009) argue, they begin customizing the user interface and, in some cases, even developing their own mods and add-ons. In both games, there is a trajectory of experience that starts with using user-generated content and grows into contributing user-generated content.

5. There is even an article titled “How to Use The Sims for Family Counseling” on Chow.com (http://www.chow.com/how_4611836_learn-couples-counseling-Sims.html).
Across our studies of games and game players, our research team has found a general trajectory of experience (see Figure 2.4). Players begin as “n00bs” with little experience. First, they develop basic knowledge and experience with important game functions. But with a game like *Civilization*, that’s simply achieving competency—becoming a basic-level gamer with perhaps 40 or 50 hours under one’s belt. Past this point, the player begins developing exploits for gaming the system—simple solution paths that work across almost every situation. In *Civ*, for years this was “leave 2 phalanx in every city.” A good game avoids these optimal solution paths, giving players many interesting decisions to make (see Balancing sidebar).

Gaming forums are the Wild, Wild West where this intellectual work happens (for examples of how this works in *World of Warcraft*, see Steinkuehler & Chmiel, 2006). In these forums, players post data from their games and examine others’ data. They collectively analyze data across games and propose rule changes. As players gather superior strategies (collections of moves and approaches), they change the broader rule systems. Eventually, players create their own “mods,” which are versions of the game with different rules. In *Civ*, this process is pretty clean-cut. Players build mods such as “GIVE peace a chance,” which prohibits players from going to war, and then official expansion packs and future versions of the game include scenarios based on these mods. In this way, the fan community functions as an unofficial research and development lab.
Balancing

Avoiding these optimal solution paths is also called balancing. To understand the difficulty of creating such well-balanced systems, consider something like World of Warcraft. Here's a game that is played worldwide by over 10 million people, many of whom spend extensive time examining systems, looking for exploits, and sharing them on sites such as Elitist Jerks.

Raph Koster, a lead game designer, artfully described the epic battle between players and designers in massively multiplayer games—ones that designers are destined to lose. His design of players' pattern-seeking behavior in evolutionary terms, arguing that those who do not learn to see through the optimal solution paths of today's world (such as eliminating credit card debt) are in deep trouble indeed.

Blizzard has been able to achieve optimal balance in WoW because they've had nearly a decade to perfect it. If a system isn't working, they change it. Then they change it again. And again. It would be great if designers of educational systems had a similar design-user feedback-redesign loop. Sadly, we don't. And educational games yield experiences that are good, but not much else.

The participatory structure of game communities enables such remarkable learning to occur. However, we can't simply design games, stick them into classrooms, and then expect students to begin rewriting their textbooks. The school-based culture of passive knowledge reception (as opposed to production) needs to change. Such a change would require revolutionizing across the entire education system—from the professional development of teachers (who themselves are treated as recipients, not producers, of knowledge) to the assessment system.

THEORY AND PRACTICE

This chapter started with the question “What makes a good educational game?” One response might be “something that represents the domain accurately or recapitulates professional practices.” But such approaches that privilege authenticity may also miss educationally beneficial opportunities that are newly available with digital media, such as leading a civilization for 6,000 years or traveling through time. Let's take the findings from the Chapter 1 and turn them into criteria for good educational games:
• Good educational games employ academic knowledge as a tool for achieving goals. Recall how in Pirates! geography is a tool for success. In games, players employ knowledge and understandings as tools for action.

• Good educational games lend themselves to systemic understandings. Games appear to be particularly good for immersing learners within systems and enabling them to explore the emergent properties of systems. Other media and curricular strategies may be better suited toward other goals.

• Good educational games employ sophisticated game design techniques (e.g., orchestrations of time, overlapping goal structures) to provide a polished experience.

• Good educational games offer multiple ways of playing them, so that players can experiment with a variety of identities in a group. Good games let reluctant kids lead, encourage advanced students to help others, or engender friendships among isolated students. If games are ultimately participatory, good educational games might encourage learners to set up and negotiate these social structures themselves as a part of game play.

• Good educational games pique players’ interests. In fact, authenticity or realism may be less important than raising interest in terms in academic subjects, in terms of designing and selecting games for learning. Students can critique games as historical interpretations or, in some cases, play with systems and then build their own mods of the game. These approaches position students as critical consumers and producers, rather than passive recipients.

• Good educational games are ideological worlds that instantiate particular ways of viewing and valuing the world. Good games don’t shroud these biases, but engage the player in a critical conversation about the world. In the case of Civilization, its material-geographic bias may be its biggest strength as it pushes the player to think about the causes of colonization. Educators may be better off choosing a game with a strong point of view and encouraging students to deconstruct it than choosing one that claims neutrality.

• Good games are social, in that they encourage social interaction of different forms and lead to productive practices (fan communities, fan fiction, machinima). Educators might inject games with social dynamics that encourage reflection, argumentation, and discussion. Some mechanics, such as supporting the development of expertise in different areas, lead naturally to peer-to-peer learning, apprenticeship, and production. As designers, we need to look for ways to encourage such discussion by creating memorable moments, differential access to information, or differentiated expertise.
- **Good games inspire creativity and smooth ramps to usher players from users to producers.** Examples of such games might be science games in which people design bridges, robots, or buildings (examples of such games are *Pontifex*, *Mind Rover*, and *World of Goo*; see Chapter 8) and historical games in which people role-play in creative ways and write about their experiences as a form of historical interpretation (as in *Revolution*; see Chapter 5).

The next chapter turns our focus to the social organization of game communities, providing a preview into how learning might be organized in the digital age.
COOPERATIVE GAME PLAY

by Kurt Squire and Henry Jenkins

Gamers are growing up. What do aging gamers want? One theory is that gamers want to socialize. Picture this: A 32-year-old gamer comes home from work. After dinner, his or her child is in bed, leaving an hour, at best a few hours, for gaming before the next morning. Marathon game sessions are out of the question. The desire to spend time with loved ones is paramount, and unless our gaming hero wants to create domestic turbulence, he or she had better not commandeer the home entertainment system.

Cooperative game play is one way out. Co-op modes allow multiple players to collaborate against common challenges. However, co-op modes have been an add-on rather than a core game play feature.

Square-Enix’s Final Fantasy: Crystal Chronicles is one of the first games designed to be co-op first, single player second. In Crystal Chronicles, up to four players must organize tactical decisions, share inventory, and rely on one another’s strengths. When a Game Boy Advance (GBA) is connected to the GameCube, each player gets a private screen and controller, giving him or her access to different information. The information on the GBA is meant to be private: Nobody really wants to see other players’ inventories splattered across the TV screen.

As Crystal Chronicles players will attest, when a player has private information that he or she needs to share, the game suddenly becomes a stimulus for communication outside the TV screen. The talk around the game is a continuous flurry of tactical discussion. Furthermore, synchronized attacks create special bonuses, so the room quickly fills with chants of “Three, two, one, go!”

Teams that fail to coordinate are quickly decimated. This concept of mutually dependent fortunes—“If you die, I die”—makes Crystal Chronicles more compelling than preceding games in which a teammate’s death relegated that player to a virtual penalty box from which he or she had to watch his or her teammates clear enemies alone.

Cooperative game play that combines differentiated access to information and co-dependent goals has applications far greater than entertainment games. In education, for example, we know that having novices and experts work together in concert on problems is among the most powerful forms of learning. Eric Klopfer
and colleagues at the Massachusetts Institute of Technology have been applying this principle toward educational ends through augmented reality games.

In a game called *Mystery at the Museum*, which is played at the Boston Museum of Science, teens and parents play in pairs as a detective, technologist, or scientist on a mission to solve a museum theft. Students and parents constitute a team, and each member gets different information based on his or her role. Parents and children report that the game provides new opportunities for them to work and play together. As one parent put it, "I can't remember the last time I talked to my [14-year-old] son for this long without fighting."