6 Implementation

Sally, a veteran game designer and writer, finished the script for a sequel to a role-playing game for children. The first game featured a strong female protagonist who had a geeky male sidekick, and for the sequel, the brand owners wanted to shift hero characters among the cast. In her script for the second game, Sally created a new male lead, a female sidekick, and a stereotypical evil scientist as a villain. Everyone on the extended team approved the script, but when two marketing people ("outsiders") finally read the finished script, they felt that the sidekick came off as a histrionic worrywart who was completely dependent on the male hero character. Her lack of agency was reinforced by other characters, such as the domineering villain, who treated her in a patronizing, sexist manner. She was bullied and embarrassingly stereotypical. Although the geeky male sidekick of the first game also did not really have agency, his character did not conform to a gender stereotypes in the same way as did the female counterpart.

Sally had to address their concerns. "I had a knee-jerk reaction," Sally admits. "I was angry. I'm a woman designer, and the team counted on me to have that perspective. Of course I'm going to treat women fairly in my writing! Who do these outside people think they are? Do they have nothing better to do than to harass me? But this question of agency showed me that no one is perfect, especially when referencing game roles." Sally went on to reflect that the incident was vital to making a better, more equitable game. "This was a bit of conventional wisdom turned on its head—'Don't let marketing see it yet'—because in this case, the marketing people were women who had a perspective that was missing from other parts of the team, and I could have actually used their eyes on the problem earlier."

The problem arose partly because of the need to differentiate the second game's characters from those in the first game and partly because of a failure to notice some stereotypical characterizations, which Sally later admitted "In the end, it is really useful to have a second pair of eyes and reflective

processes in order to help writers and designers hit the mark. We don't have to be afraid of making mistakes because it will reflect on our credentials as good people. And this is everyone's job, and why working in teams is good, and why diverse teams matter."

Once the problem was noted and acknowledged it was relatively easy to fix. Sally spent a day adjusting the character and improving interactions among nonplayer characters. She is convinced that the game is now much better: "I was not looking at how all the parts fit into the whole. Problems emerge, particularly when using a familiar form, because the structure is familiar and old structures bring along some dated inequities that you have to watch out for.… In the discovery and ideation process, it is difficult to see these problems emerging. The development of general characters and sidekicks sounds innocuous from a 50,000-foot view. There has to be a conscious effort to watch for conflicts in values as the details of implementation emerge. Sometimes you personally can have very strong values, yet still you might resort to caricature and stereotypes. Values at Play offers a way to put a check on your process. This systematic check is a way to avoid unintentional biases from creeping in."

Values for a given project must be translated into specifications for graphics, scripts, and lines of code. This process is what we call *implementation*—the transformation of a creative vision, ideas, aspirations, and fundamental requirements into a playable artifact. Implementation is the heart of game creation and design.

This chapter addresses the question that a conscientious designer might ask: how can I pursue a great game and still think about values? The question itself sounds ambiguous, a bit like asking how one bakes bread. One way of answering is to provide a recipe: add one teaspoon of salt to five cups all-purpose flour; stir a packet of dry yeast into a half cup of warm water and wait ten to fifteen minutes until the mixture is foamy; and so on. Another way of answering is to provide a set of principles: identify various bread-baking paradigms, and explain the properties of key ingredients (such as flour types, raising agents, and sweeteners) and the ways that each contributes to the baking enterprise. The first answer is more likely to result in an immediate product; the second develops the skill and know-how of the baker. Designing with values in mind, like design in general, draws on art, science, and practical wisdom. Implementing values in a specific game engages knowledge, experience, intuition, creativity, and testing within an iterative cycle of discovery, trial, and improvement. It calls for a focus on the artifact and the diverse factors in its context of use. Accordingly, implementation does not lend itself to a step-by-step recipe. Instead, revealing

guiding principles through cases offers greater flexibility and adaptability that is better suited to the challenges that a designer might face.

In this chapter, we illustrate implementation with several cases that are drawn from our own experiences as well as those of others. Although creative inspiration is an essential part of the practice, two heuristic devices provide supplemental stepping stones:

1. *Pay systematic attention to a game's elements*. In this process, designers consider the full range of a game's elements, such as narrative, character representation, game actions, and even the substrate of game engines and hardware. This opens a wide array of ways to implement a given value. Although successful implementation is often a challenge, designers may improve their odds by creatively but systematically seeking different combinations and striking out in unusual directions. The VAP heuristic does not require adoption of the specific analysis of games elements that we offer in this book. The key idea is to conceive of all analytic components (under whatever analysis one prefers) as potential vehicles for values implementation.
2. *Consider what you are trying to achieve and how your game conveys values to players (and potentially others)*. You might be interested in changing behavior (for example, through generous deeds), enabling a valued performance (through creativity), inducing a desired experience (freedom or its opposite, for example), or inducing feelings (such as empathy, disgust, or shame) to attune players to certain issues and affect their inclinations to act. With values such as peace, racial justice, and democracy, you may aim for a cognitive effect (to engage users' beliefs, prejudices, and emotions or deepen their understanding and appreciation of issues). Because players may not experience a game in the ways a designer intends, an iterative design process that includes values in a play-testing regimen is essential for the implementation process.[1]

Translation: Practice and Process

Among games that aim to shape beliefs, understanding, and preferences, *Homefront* (Kaos Studios 2011) is one example from the AAA ("triple A") world of high-quality games developed for major platforms with high marketing budgets. Lead level designer Rex Dickson has revealed that his team's aim was to create a "feeling of sympathy for the plight of innocents caught in war. There are universal themes in our game that all humans react to on a very visceral level—babies and children caught in the crossfire, or a home stolen and turned into a prison. A loss of your identity

under a brutal occupation."[2] In the discovery phase, designers noted that the game needed to have a balance between player agency (manifesting the value of freedom) and investment in the narrative. This was crucial to the values that the designers wanted to express. For designer Chris Cross, in first-person shooters, players cannot see themselves and thus have no one to identify with—no mirror that reveals how the character's actions would be received socially. But he did not want to give up the familiar shooter mechanic: if players already knew the key actions and did not need to learn a new mechanic, then they could be more fully immersed in the narrative of the game. So the team designed three allies who would accompany the player character, express human reactions to game situations, and foster empathy.[3] They focused on character, player choice, and rules for interaction with nonplayable characters as elements that help create meaningful experiences and support the core values of empathy. Although the game stays within the familiar conventions of the first-person shooter, it achieves a complex, values-rich design goal.

Finally, as hard as conscientious designers may work to implement values in games, values that are at play are as much a function of the circumstances in which a game is played as the contours of the game itself. By considering the interaction of features with the context of play, designers might discover ways to take advantage of this interplay to achieve their goals even more effectively.

Case: *Pipe Trouble*

In *Pipe Trouble* (Pop Sandbox 2012), values are in evidence in many of the game's elements, including narrative premise and goals, player actions, player choices, rules for interaction with nonplayable characters, rules for interaction with the environment, and rewards. Socially responsible "games for impact" highlight these elements while addressing pressing social and political issues. *Pipe Trouble* was funded by Canada's public broadcaster TVO and developed in conjunction with the film *Trouble in the Peace* (Pinder 2012). In this game, players lay natural gas pipelines in Canada under constraints to make a profit and move natural gas from the beginning to the end of the level. The game uses a rerelease of the classic *Pipe Mania / Pipe Dream* (Lucasfilm 1989), where players construct a connected pipe over a long distance to generate conversations about the environmental effects of natural gas pipelines. Like many games, *Pipe Trouble* uses a familiar mechanic and over-the-top scenarios to engage players. It uses critiques from vandals, politicians, and the media as in-game penalties emerging from the community.

Figure 6.1
Troubling community issues, from *Pipe Trouble* (Pop Sandbox 2012).

The narrative that emerges in this game is one of cleverness in handling local protests, and the values that emerge are self-interest, profit, and a disregard for the environment. The game generated so much controversy in Canada that it was pulled from the TVO website. The major criticism was that the game encouraged players to play as ecoterrorist bombers, which was not the designers' intent in creating the game.[4]

Examples of the serious games genre are often criticized for being didactic. They usually are consigned to the educational rather than entertainment sector and have been accused of not being fun to play. In the past, this criticism has been warranted, particularly when content elements are chosen solely to express values. Increasingly sophisticated games for impact have become more successful as they involve a number of game elements in the quest for meaning making.

Case: *Profit Seed*

In *Profit Seed* (Tiltfactor 2008), designers implemented values through interface, character, rewards, and rules for interaction with the environment. The game mechanics require players to control gusts of wind to move seeds

to particular fields on a farm. Some seeds are organic, and some are genetically modified organisms (GMOs). The wind mechanic mimics the real-world ways in which pollen and genetically modified seeds fall on the lands of organic farmers. If a mixture of organic and GMO seeds is found on a plot of land, the farmer will be exposed to litigation—a situation that has happened in the real world. In the game, a lawyer arrives and issues a summons to the player. The game elements of interface (the wind) and character (the farmer, the lawyer, the seeds) allow players to explore the values of private and intellectual property, sustainability, and fairness.

Case: *World of Warcraft*

Consider the value of cooperation. A designer might be able to achieve cooperative behavior within a multiplayer online game by imposing constraints on what actions players can perform or by motivating them with certain rewards. In *World of Warcraft* (Blizzard Entertainment 2004), designers implemented values through player actions, context of play, and rules for interaction with nonplayable characters. In the early days of *World of Warcraft*, raids against end-bosses required mass cooperative efforts of up to forty online players to succeed. This required synchronous participation among many players who sometimes lived in different time zones and had busy lives. Nonetheless, they made this event an important priority to achieve the goal. In a sense, this was a virtual barn raising in which players joined together to complete a task that would be impossible to achieve alone. Groups like the Angry guild, a *World of Warcraft* Horde guild, have a long and well-documented history in successful massive efforts (figure 6.2).[5]

Figure 6.2
Forty members of the Angry guild, assembled to attempt a raid on the Twin Emperors, from *World of Warcraft* (Blizzard Entertainment 2004).

While changing designs in the game require fewer players to complete such raids, experienced players who complete heroic mode raids as a team continue to receive the best rewards. Success is rewarded with some of the game's most desirable gear. Coordinating many players is a challenge, but the value of cooperation is successfully implemented through the elements of rewards, strategies, and rules for interaction with other players.

Case: *Shadow of the Colossus*

Shadow of the Colossus (Sony Computer Entertainment 2005) is another game that implements cooperation and the related value of coordination. In *Shadow of the Colossus*, the designer implemented values through player choices and rules for interaction with other characters. Game designer Fumito Ueda expressed these values by choosing an open-ended form of play rather than giving specific instructions to players. The playable character, Wander, develops a deep relationship with his guide horse, Agro. The horse's behavior, however, is programmed, so she does not always respond to commands. Players therefore cannot "drive" the horse as they would drive a car that reacts precisely to their movements. The player must ride the horse in a two-way relationship that is governed by give and take. This control style leads the player to adopt a cooperative mindset. Companionship and collaboration are values inherent in the Wander/Agro relationship. In Ueda's words, "A real horse … doesn't always obey. It's not like a car or a motorcycle; it won't always turn when you say 'turn!'"[6] The game elements that are relevant here—player choice and rules for interaction with nonplayable characters—allowed Ueda to manifest particular values in *Shadow of the Colossus*.

Other games strike more directly at shaping certain types of behavior. Designer options for implementing such values fall on a continuum. On one end (the coercive end), they may achieve certain behaviors through force (or tight constraints). The game might not allow certain actions to be performed because of the rules for interaction with the environment or for interaction with nonplayable characters or other players. In a maze, players might be able to choose only two paths, three weapons, four actions, five targets, and so forth. On the other end of the continuum (the cooperative end), designers may encourage certain behaviors while still allowing players to exercise choice. This is possible by drawing on known motivators or rewards (such as points, penalties, and levels), feedback (sensory cues with direct pleasant or unpleasant associations), and cues with certain meanings (such as a doorway, a green or red light, the sound of an explosion, and so on). Among approaches to shaping player choices, some are best conceived

as obstacles, and others as facilitators. For the latter, designers lead players to engage in certain behaviors by making them easy, inviting, or attractive.

Case: *Farm Blitz*

In *Farm Blitz* (Financial Entertainment 2010), designers tried to implement values through character, player actions, and narrative premise and goals. *Farm Blitz*, from the Doorways to Dreams Fund, is a financial literacy game that combines elements from two popular games, *Bejeweled* (PopCap Games 2001) and *FarmVille* (Zynga 2009a), to promote good savings habits and discourage the accumulation of debt (figure 6.3). The player's goal is to slow down the Bunnies (which multiply as rapidly as debt does) and to grow trees (which increase in size as slowly as money in a savings account does). The game creatively implements values as game elements by using common knowledge—that rabbits multiply rapidly—as its central metaphor. Thus, the character element helps demonstrate the dangers of owing money, and the player's attempts to slow down the Bunnies (the player actions element) matches the real-world behavior that the game hopes to promote (to slow spending). The game breaks with common game goals, which usually focus on rapid accumulation (of money, treasure, or points). The unusual game action of limiting growth (of Bunnies and debt) might prompt a player to question the excessive pursuit of material possessions.

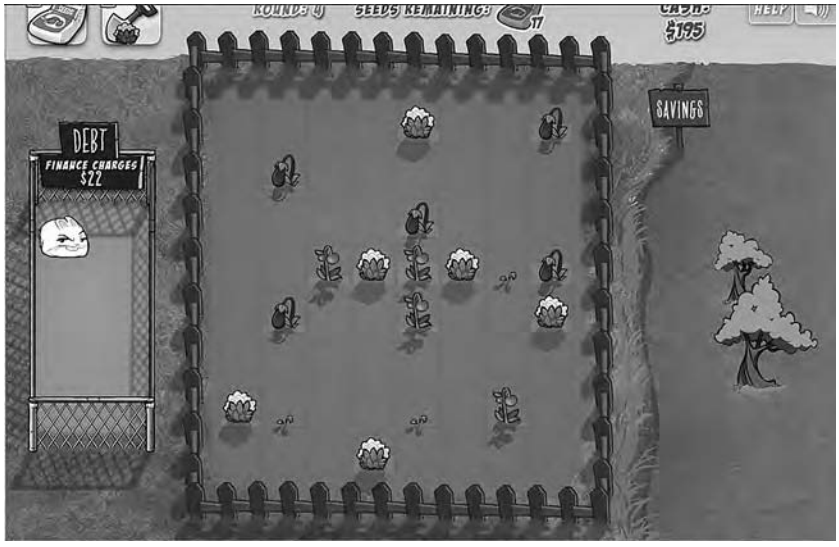

Figure 6.3
A scene from *Farm Blitz* (Financial Entertainment 2010).

Case: *POX: Save the People*

In *POX: Save the People* (Tiltfactor 2010), designers tried to implement values through player actions, rewards, narrative premise and goals, and rules for interaction with the environment. Mary Flanagan's team created the *POX: Save the People* board game, one of Tiltfactor's public health games, to teach systems thinking and generate experiential and analytical responses to vaccination, herd immunity, and the spread of disease (figure 6.4). The team created the original game and two other games. *ZOMBIEPOX* (Tiltfactor 2012) was an identical game with a different narrative premise, and the other was an iPad direct translation of the original game. The goal was to use a strong narrative premise and fantasy to allow players to consider the world around them in different ways, although several public health officials and teachers thought that the narrative's strong fiction would teach far less than a more straightforward design. The results of this implementation are discussed in the next chapter.[7]

Values in Conflict

In the midst of a deadline, a West Coast veteran game designer, "Lorenzo" shared his thoughts on values and game design tradeoffs: "Almost all the games I've worked on have involved noncontroversial subject matter. I've never done a shooter, so you don't have an obvious conflict there in values—i.e., killing people." But he noted that there seems to be a real conflict in values in the commercial models in game design across most types of games. A basic conflict often arises between a designer's creative interest (to make an authentically creative work) and a publisher's economic interest.

Figure 6.4
Two board games—*ZOMBIEPOX* (Tiltfactor 2012) and *POX* (Tiltfactor 2010).

Lorenzo said, "Recent games I've been working on have been 'free to play' games, so the teams had to acquire some pretty awesome chops within game economies. There is definitely a fine line, though, between a cool game and a money sinkhole. We just launched a poker game and have amazing data coming from it. Right after the beta launch, there was one guy who by the second day had spent $700 on the game and had gotten to level 100. This meant he did not put down the game for 48 hours. Is that OK? Or not?" Lorenzo noted that he frequently works with publishers who want simple reskins of existing games with their own content. Game designers often avoid making direct clones because the work is not very creative. Publishers, however, tend to think that such games are cheaper to build and a safer bet with audiences; they pose less risk. So is cloning an existing game model a good idea that responds to what is naturally fun, or is it an uncreative practice that steals the ideas of others?

Any functioning artifact is the product of interacting (and sometimes conflicting) constraints, including physical, economic, and functional constraints. Values may interact with other constraints but also with one another. Values clash in technology design no less than they do in politics, and the variety of these interactions is limitless. Conflicts are not necessarily the results of clumsiness, lack of insight, or dullness but are the inevitable result of a commitment to values' pluralism. We find inspiration in the words of the great political philosopher Isaiah Berlin, who offers a classic assessment of values in conflict:

> What is clear is that values can clash—that is why civilizations are incompatible. They can be incompatible between cultures, or groups in the same culture, or between you and me. You believe in always telling the truth, no matter what; I do not, because I believe that it can sometimes be too painful and too destructive. We can discuss each other's point of view, we can try to reach common ground, but in the end what you pursue may not be reconcilable with the ends to which I find that I have dedicated my life. Values may easily clash within the breast of a single individual; and it does not follow that, if they do, some must be true and others false. Justice, rigorous justice, is for some people and absolute value, but it is not compatible with what may be no less ultimate values for them—mercy, compassion—as arises in concrete cases.
>
> Both liberty and equality are among the primary goals pursued by human beings through many centuries; but total liberty for wolves is death to the lambs, total liberty of the powerful, the gifted, is not compatible with the right to a decent existence of the weak and the less gifted.… Equality may demand the restraint of the liberty of those who wish to dominate; liberty—without some modicum of which there is no choice and therefore no possibility of remaining human as we understand the word—may have to be curtailed in order to make room for social welfare, to feed the hungry, to clothe the naked, to shelter the homeless, to leave room for the liberty of others, to allow justice or fairness to be exercised.[8]

Berlin insists that clashing values are not an unusual condition of political and ethical decision making but are inherent to the pluralistic approach to values that he espouses. In each year's docket of U.S. Supreme Court cases, Americans may witness this unending succession of constitutional values in conflict. Even reductionists such as utilitarians, who hold that different values can be reduced to a single value such as happiness or money, cannot avoid conflicts that arise when a decision affects different actors differently. It is not surprising, therefore, to find that design projects (particularly those with multiple requirements, goals, constituencies, and constraints) are rife with clashes and conflicts. These include safety versus cost, transparency versus privacy, aesthetics versus functionality, security versus ease of use, ease of use versus depth, novelty versus familiarity, and entertainment versus education. Clashes may occur across values and across people because choices made in the design and operation of a system affect various people differently.

What is a designer to do? In practical ethics, law, moral philosophy, and politics, resolving values in conflict remains one of the most intractable challenges.[9] Values at Play does not offer an across-the-board solution for problems that for millennia have perplexed lawmakers and philosophers, but this does not mean that designers should throw up their hands in despair, concluding that these hard problems might as well be dealt with arbitrarily or simply ignored. In our view, there is much to be gained by staying alert to design decisions that give rise to such conflicts and to confront them with humility but systematically. Fortunately, not all conflicts are utterly intractable, and although all may not be solved perfectly, they may be eased and mitigated.

For designers who confront hard choices involving a clash of values, the Values at Play heuristic outlines three approaches—dissolving, compromising, and trading off. Dissolving, the happiest of the three, involves finding a creative redesign that provides an alternative pathway for avoiding a particular conflict. When dissolving is impossible, compromise is an alternative that promotes each of the values in question but in less than full measure. Finally, a tradeoff may be necessary, in which one or some values are sacrificed in favor of others.

Dissolving

Dissolving a conflict means developing a creative redesign that achieves all values in question. Too often this option is overlooked because systems developers sometimes fail to see that conflicts are due not to fundamentally incompatible values but to contingent material constraints and uninspired designs. Sometimes this may be achieved by revising prior decisions

or choosing different engines or infrastructures because some conflicts may be mere material artifacts or simply poor or rushed design. At times, users and producers of technology resign themselves to making hard choices that may be convenient for incumbents to perpetuate (some conflicts include privacy versus security, anonymity versus accountability, and usability versus functionality). In fact in many concrete instances, what designers face is not so much a brute clash of values, but a narrowing of alternatives due to prior decisions, which in turn reflect uninspired design or, simply, the state of the art of those times.[10] In both cases, revisiting prior decisions might be productive, particularly if the state of the art or science has advanced. Computer designers who previously scratched their heads over the conflict between portability and power, for example, benefit from advances in miniaturization, which greatly eased (if not entirely dissolved) this conflict. Another example is usability, considered an inevitable casualty of complex systems; this conflict can often be dissolved with the help of new visualization techniques, which make it possible to present large and complex data patterns in ways that are comprehensible to users. At times, unimaginative conceptualization is more of a problem than inherent incompatibility of ends. In the realm of games, skeptics may dismiss the idea of values in games and believe that games can either be fun or have deep intentions but not both. Values at Play is an approach to design that aims to dissolve this conflict by demonstrating games that are fun to play and also embody desired values.

The *Peeps* (RAPUNSEL 2006) game project illustrates how conflicts can be dissolved through creative thinking. The designers were developing a three-dimensional dance game that taught basic programming concepts to middle-school girls.[11] The concept was to embed programming code in clothing so that the code, via the clothing used, changed characters' dance moves. Because the game's point of view would shape the relationship between the player and the game world's inhabitants, the designers chose a top-down, God's-eye view. They were concerned, however, that this point of view might lead players to consider their relationship to playable characters in terms of a master-slave dynamic. Rather than abandon the top-down point of view (which might sacrifice playability), they discouraged the master-slave interpretation by changing another element in the game. By inserting a handful of simple artificial intelligence techniques, they provided characters in the game with a degree of autonomy from the player's control. For example, the character offered her own expressions and made comments without the aid of the player. In this way, the playable character was scripted as a semiautonomous agent rather than as a slave

to the player's commands. The designers were concerned about the values that might be conveyed through the point-of-view element, so to avoid compromising the quality of the play experience, they implemented some small patterns that were programmed into the behavior of the character. This allowed the designers to offer a God's-eye viewpoint that respected the autonomy of the character. By tinkering with rules for interaction (and not allowing total control of characters in the game), they avoided a problematic interpretation that might otherwise be encouraged by a top-down view of the game world.

Compromising

Where dissolving a conflict is impossible, compromise might be the best alternative. This means promoting each of the values in question but to a possibly unequal extent. Such compromises are so ubiquitous that we hardly even recognize them as such. One familiar illustration is security routines at airports: both liberty and security are compromised as we are scanned and probed. Liberty is certainly compromised, but security is not achieved to its fullest extent because authorities understand that certain effective probes and scans would be unacceptable to passengers. Values compromises are frequently found in popular commercial games. In the original and first expansion pack of *World of Warcraft* (Blizzard Entertainment 2004), players often participated in "capture the flag" minigames that involved ten players from the Horde and another ten from the Alliance. Participation depended on a player's level. Players in levels 10 through 19 were grouped together, as were players in levels 20 through 29, and so on. Some players, however, became the most powerful character at the upper level of the bracket and then chose to remain within that bracket and not advance. They were willing to forego experience points to retain their powers and their advanced weaponry within the lower bracket. Less skilled players were at a significant disadvantage when entering this battleground. They often were killed immediately and sent to the nearby graveyard, temporarily eliminating them from play. New players had little reason to try to fight at their level because game rules favored the more experienced players who stayed in the bracket to take advantage of the weak. The value of fairness was in conflict with the value of player autonomy.

Blizzard resolved the conflict through several decisions. First, designers introduced experience points in the battlegrounds, which gave new players more reason to play. The system also monitored progress so that players who had played before at top levels earned enough experience points to move up to the next bracket. After these changes were made, high-level

characters complained because they wanted to assert their seniority with their advanced weapons and powers. Blizzard allowed them to "turn off" such experience points (for an in-game fee) when in the battleground, but the game now sent all players whose experience points were hidden to their own special battleground. This compromise allowed new players to progress and experienced players to wield their power. Finally, Blizzard increased the number of brackets so that each included only five levels of players rather than ten, thus reducing the drastic differences in experience among players. Thus, by changing the elements of rewards and rules for interaction with other players, the game designers preserved the values of equity and opportunity for new players and individuality and autonomy for more experienced players.

Trading Off

In cases where compromise is neither feasible nor desirable, a third option is to trade off—to give up one or some values in favor of others. To return to the example of airport security, advanced imaging technology machines, known as full-body scanners, have been widely criticized, in part for health risks from exposure to the rays but mostly because of the detailed view that they offer of a person's body. These body scanners have traded off modesty and possibly health for security (although skeptics say even security is not achieved). To mitigate, passengers are offered the alternative of avoiding the tradeoff by opting for a body frisk.[12]

We could end the story here but a later turn offers insight into how conflicts can be successfully approached. In 2011, mindful of the uneasy tradeoff, the Transportation Security Administration (TSA) announced that a new software was being installed on its millimeter wave advanced imaging technology (AIT) machines. Instead of producing a detailed body image, the new scanners produced a generic human outline that highlighted possible threats. John Pistole of the TSA was quoted as saying, "This software upgrade enables us to continue providing a high level of security through advanced imaging technology screening, while improving the passenger experience at checkpoints."[13] Assuming that the system works as claimed, the upgrade constitutes progress: the early scanners traded modesty for security, but the upgraded version recovers modesty while maintaining security. In our terms, this innovation successfully dissolves an uncomfortable conflict between these two values.[14]

To return to the world of games, and specifically to the RAPUNSEL project's *Peeps* game,[15] and discuss character representation. The appearance of a character (its size, clothing, sex, build, and ethnicity) contributes significant

meaning to a game. Because even something as basic as whether game characters are male or female is a huge marker of difference, the game's design team decided to try out gender-neutral abstract shapes as characters. But after conducting an online survey to collect player feedback, the team realized that their plan had not worked. Many players perceived the shapes as male, and middle-school girls complained that the shapes "just aren't … cool enough." Players who were surveyed overwhelmingly preferred overtly sexualized female figures rather than other types of female characters, abstract shapes, and animals. Players tied their preferences to the products and services that they already used. The players' favorite character was a cartoon girl from a popular fashion website because, as one eleven-year-old put it, she was a "cool girl … she's modern, art-time; she has attitude."[16] In such a situation, most design teams would happily give in, quoting the old gaming mantra "Give the players what they want." What players want, however, has been shaped by their consumption of television shows, films, and other games and often embeds unwelcome values. Is it acceptable to perpetuate a stereotype in order to please players? Instead, the design team resisted stereotypes, went back into development, and through tradeoff and compromise created a sportier and less sexualized character.

PeaceMaker (ImpactGames 2007), the Israeli-Palestinian conflict game discussed in chapter 3, features a different sort of tradeoff. The narrative premise of the game, achieving peace, is rarely without conflict. To start, players take on a character role (either the Palestinian president or the Israeli prime minister) in the middle of the conflict. The game goal is for either side to produce a two-state solution to the conflict. By incorporating real-life videos and images rather than cartoons, the game adds dramatic tension and a better sense of the stakes. Players choose actions, from aggressive to cooperative, but they soon learn that the conflict is exacerbated by aggression and violence. The game triggers empathy on both cognitive and emotional levels.[17] Because the player initially has to take sides, the values of community and loyalty are woven into the role of the playable character—and yet those values can be at odds with the goal of the game. The player can play the game from the opposite character and see how the same values affect what was once the enemy. The solution in this game lies in giving up aggression and compromising one's own most valued principles—home, community, loyalty—so that others can enjoy their own experience of those same values. The actual conflict of values is embedded into the game fabric, and a solution often seems impossible, which makes for a unique case.

Implementation for Designers

Implementation involves translating values into game architecture and features. Values at Play does not supersede the creative act of design. Instead, it offers guideposts to designers. One approach is to look to key game elements as potential sites for shaping values. Another is to consider potential modes of connecting with players to encourage certain behaviors, challenge beliefs and attitudes, or induce certain affective responses. By considering game elements, designers may find inspiration for implementation challenges. Ambitious designers undoubtedly will confront values conflicts. These are inevitable in most complex systems, and games are no exception; such is the nature of games, of technological artifacts, and of the moral universe.

Not all conflicts, however, are intractable. Values at Play provides three questions that designers can ask to help them navigate the quagmire of values conflicts: Can the conflict be dissolved? Is compromise possible? Must some values be traded off in favor of others? Translating big-picture values into nitty-gritty decisions is never easy. But through careful attention to the full spectrum of game elements, modes of intervention with players, and awareness of the possibility of conflicts, designers can take the values they discovered and implement them within the game world.

Values in Game Hardware

by Kyle Rentschler

In our day-to-day lives, we encounter many designed objects, from the utensils that we use to eat to the cars that we drive. Although we often overlook the design of these objects or how their design affects us, even simple observations of the most mundane objects reveal those objects to be deliberately constructed around human values. For instance, the design for small, dull, brightly colored children's scissors is different than the design for large, sharp, industrial-looking adult's scissors, probably for self-apparent reasons such as safety, accessibility, and visual appeal. Such analyses also pertain to objects that are associated with play. Lincoln Logs, for example, recall nature, austerity, and American history in their look and feel, and Legos seem to be designed around modernism and modularity. In turn, each type of building block also affords uses that parallel their physical details. Lincoln Logs seem restricted to what actual logs are capable of building, and Legos allow for a wider variety of structures. Although Lincoln Logs and Legos might initially seem like homologous toys, they provide different play experiences. Values are similarly

embedded in video game hardware, which is the material component of today's most prominent mass-mediated playgrounds.

But before turning to a discussion of how values are embedded in video game hardware design, we have to address an important question: what is hardware? *Hardware* is a tricky term with a sinuous past. It was first used in the fifteenth century to denote small metal goods, and for hundreds of years its original definition remained unchanged. The use of the term hardware in terms of household appliances fits into this original definition. However, an additional definition of *hardware* emerged in the late 1940s—"the physical components of a computer system." Video games appropriated this term from early computing and its hardware/software bifurcation. In other words, hardware is those physical parts of the video game that players interact with in the material world. Video game hardware generally includes the platforms that are used to run game software (such as a desktop PC, a Nintendo DS, or a Sony PlayStation 3), and controllers and the peripheral equipment that players use to play the game (such as a keyboard, a video game controller, or an iPhone touch screen).

Video game hardware is a designed object, and the various types of hardware are prototyped and actualized by teams of professional designers. Popular video game companies spend millions of dollars on the research, production, and marketing of their hardware, and they put a lot of thought into its design. Up and down the production line, video game designers make decisions about both hardware and software. Sometimes these decisions seem exclusive to either software or hardware, such as deciding the genre that a game will fall into or selecting the materials that will be used to build a console. However, most decisions are not exclusive to either the hardware or software components of a game. Indeed, decisions made on the design room floor about hardware often take software into consideration and vice versa.

Although many hardware designers are aware of how hardware technologically influences software, popular rhetoric surrounding game design often relegates hardware design to the back burner. It may be helpful to think of hardware and software as coconstituting the game and hardware and software design as coconstituting game design. If we want to talk about game design, we have to recognize the integral role that hardware plays. For economic purposes, it makes sense for the game industry to reuse hardware platforms, so that not every game requires a new console or controller. Perhaps in part because of this, hardware is often taken for granted in considering the overarching play experience of a particular game. On the other hand, many indie games and a handful of commercial games often use unique hardware that was designed specifically with the software in mind. Mary Flanagan has shown the important role that is played by hardware in *[giantJoystick]* (2006),

where players must collaborate to control a ten-foot tall joystick to play classic Atari games. This unconventional control scheme not only draws attention to hardware as an integral part of game design but also fundamentally alters the experience of playing the game.

Similarly, the play experience in *Dance Dance Revolution* (Konami 1998) is as contingent on the hardware as it is on the software. By the late 1990s, consumers were avoiding public arcades in favor of private home consoles. Arcade developers scrambled for the next hit, and Konami drew from a rich history of innovative arcade hardware to bring the burgeoning rhythm genre to arcades with a fresh control scheme. *Dance Dance Revolution* was the first of many dance games that replace the traditional controller with four directional arrows on the ground. Konami decided that this hardware would be well suited for arcade play, attracting onlookers to the machine as both audience members and potential players. The game turned out to be a huge hit. Although *Dance Dance Revolution*'s mechanics are similar to preceding rhythm games—such as *PaRappa the Rappa* (NanaOn-Sha 1996), which requires players to tap the buttons of the PlayStation controller in sync with the rhythm of music—it differs in how the player pushes the buttons. Instead of playing the game inertly from a seat, players are required to move their entire bodies, and because the game is played in an arcade setting, this often takes place in front of groups of other people. The game quickly gained a reputation for encouraging physical fitness and possibly helping players become better dancers, and a devout cult following of dynamic individuals added elements of performativity. The biggest shift from early rhythm games to *Dance Dance Revolution* is the hardware itself—the arcade cabinet design and its constituent control scheme. Although *Dance Dance Revolution* and its predecessors intimately share many gameplay mechanics, the change in hardware drastically changes the phenomenological experience of playing. What could have been a trite and briefly popular game genre endures to this day, and its popularity ebbs and flows in cycles that often are based on hardware innovation, such as the *SingStar* (London Studios 2004) microphone or *Guitar Hero* (Red Octane/Activision 2005) guitar. The popularity of an entire commercial genre of games is predicated on hardware.

As shown by the above example, hardware can be designed with software while the overarching game is being designed. Throughout the development of hardware, designers can imbue it with values. Because most game hardware is developed with commercial interests in mind, values such as accessibility, ease of use, approachability, expense, and ergonomics are often taken into consideration in popular hardware such as the iPhone or Nintendo Wii. Even industry standards, such as the proliferation of first-person shooters over the past decade, have influenced the design of modern controllers. Indeed,

popular types of games influence the development of hardware. The Xbox 360 S controller, for example, was designed with first-person shooters in mind. Sometimes, hardware is not developed most profitably the first time around. The original Xbox controller, for example, was often seen as being too large and cumbersome for small hands. In response, Microsoft imported its smaller Japanese market controller as the default controller in the United States, giving a wider range of players access to games on that platform. Accessibility and equality were not taken into account in the initial design but were foregrounded in a later version.

Potentially every designed object has values embedded in it, but sometimes it is easier to locate values in atypical artifacts because they are not the norm. One example of an unusual piece of hardware is the cabinet of Atari's early maze game, *Gotcha!* (Atari 1973). *Gotcha!* was Atari's fourth game and one of the first examples of the maze game genre, but it is perhaps best remembered for its arcade cabinet joysticks. Due to what is rumored to have been an inside joke at Atari about joysticks resembling phalluses, early versions of *Gotcha!* implemented rubber domes that simulated breasts. To play the game, the player squeezes these mounds to navigate the maze. The public responded negatively to the release of the game, and subsequent versions of the game used regular joysticks. However, as one of the many 1970s arcade cabinets to experiment with hardware interface design, it is remembered for its overhanded integration of sexuality and the female body. In the designers' intentions, the actual design of the cabinet, and in the public's subsequent outcry, we can see how designing hardware with certain values in mind can be interpreted as controversial, abnormal, explicit, lewd, and sexual.

On the other hand, sometimes hardware has been praised for the values that it seems to promote. With the rise of casual gaming, some hardware has been lauded for its accessibility and ease of use. Although the Nintendo Wii and Nintendo DS are good examples of this, the surge of the iPhone as a gaming platform perhaps best typifies what it means to design hardware around values like accessibility. Although many nongamers have long considered console controllers an intimidating barrier to entry, the iPhone has helped spawn a new market of gamers who play on the go in short bursts. The iPhone is unintimidating, builds off knowledge that the player has acquired by using the phone in its other capacities, and appears to be easier to use than other gaming devices because of its touch screen. Because Apple has historically designed its products around values such as ease of use, we can see how these values have been translated to video game hardware design. Indeed, the value-embedded design of video game hardware has become relevant not only to aficionados or to hardcore gamers who might search for an old *Gotcha!* cabinet, but to everyday users of our most pervasive technology.

These two examples demonstrate how values have been embedded in the design of past hardware. Looking forward, we can predict that there will be an increased awareness of hardware design in the game industry. As video game design becomes more and more scrutinized, the possibility of intentionally designing hardware around select human values emerges as a distinct possibility. Whatever this hardware turns out to be, we will be able to learn from it, as we have from past hardware. Just as play doesn't take place only on the screen, the values at play do not exist only within the monitors where we play digital games. They also exist in what we use to play them—in those pieces of the game that exist in the material world. We need to understand hardware as part of the game itself, and when we talk about values in games, we need to understand the role that is played by hardware in establishing these values. This allows us to have a more nuanced understanding of games, expect more of ourselves as consumers, demand more of ourselves as designers, and inspire deeper thought and reflection on whatever we create. By taking this values-conscious step, we make ourselves more mindful players and designers.