II The Values at Play Heuristic

4 Overview of the Heuristic

Designing and building a digital game can be extremely complex, comprising activities with many interwoven layers and dimensions. But more than that, games created for widespread distribution, including commercial distribution, are shaped by input from investors, publishers, executives, designers, and players who desire to direct the multistep process that takes the game from idea to finished product. We are aware that adding values to the equation—a crucial step—increases complexity with a layer that might seem vague and abstract, that is why it is helpful to have a concrete playbook for considering values in design.

The Values at Play (VAP) heuristic is a hands-on, dynamic approach to considering values in design. More concrete than a general command but more open and flexible than a step-by-step method, the VAP heuristic allows progress on a project even when the final goal is not fully articulated. The heuristic can serve as a rough guide for designers who would like to shape the social, ethical, and political values that are embedded in games.[1]

The VAP heuristic includes three components:

Discovery: Discovery involves locating the values that are relevant to a given project and defining those values within the context of the game.

Implementation: Implementation includes translating values into game elements—including specifications, graphics, and lines of code. The heart of design, it is the process of realizing values in terms of the basic practical elements of a game.

Verification: Verification requires establishing the validity of the designer's efforts to discover and implement values. Verification is a form of quality control.

Discovery, implementation, verification: We call these components and not steps because a designer does not first discover values, then implement them, and finally verify. Instead, the process is iterative, just as the software development process is. The word *iterative* means "repeating," and iterative design is a cyclical process

of generating ideas, creating prototypes, testing, analyzing, and refining—and then repeating the cycle an indefinite number of times until a desired result is reached or, more pragmatically, until a deadline is reached or funding is depleted. "Software development is definitely an inexact process, which is strongly influenced by the personalities, abilities, and experience of the people doing it. Herein lies much of the problem," the software designer Robert O. Lewis has observed: "No two people given the same problem would ever possibly design and code the same precise software solution, so software is as complicated and varied as the combined cognitive strategies from all the people who contribute to it."[2] What's more, software systems are notoriously filled with bugs, and such bugs have brought down banking systems and postponed space missions. Given all the uncertainties in this process, iterative design serves as quality assurance. The goal of iterative design is to help the technical team move through the development cycle and consistently incorporate feedback from software users—which, in the world of digital games, means players.[3]

The typical development cycle loops in fast turnaround (figure 4.1). "Throughout the entire process of design and development, your game is played," Eric Zimmerman has explained: "You play it. The rest of the development team plays it. Other people in the office play it. People visiting your office play it. You organize groups of testers that match your target audience. You have as many people as possible play the game. In each case, you observe them, ask them questions, and then adjust your design and playtest again."[4] In the case of cascading projects, such as *World of Warcraft* (Blizzard Entertainment 2004), the cycle continues iteratively and also in a cumulative way until the product line closes—often this cycle can be years in the making.

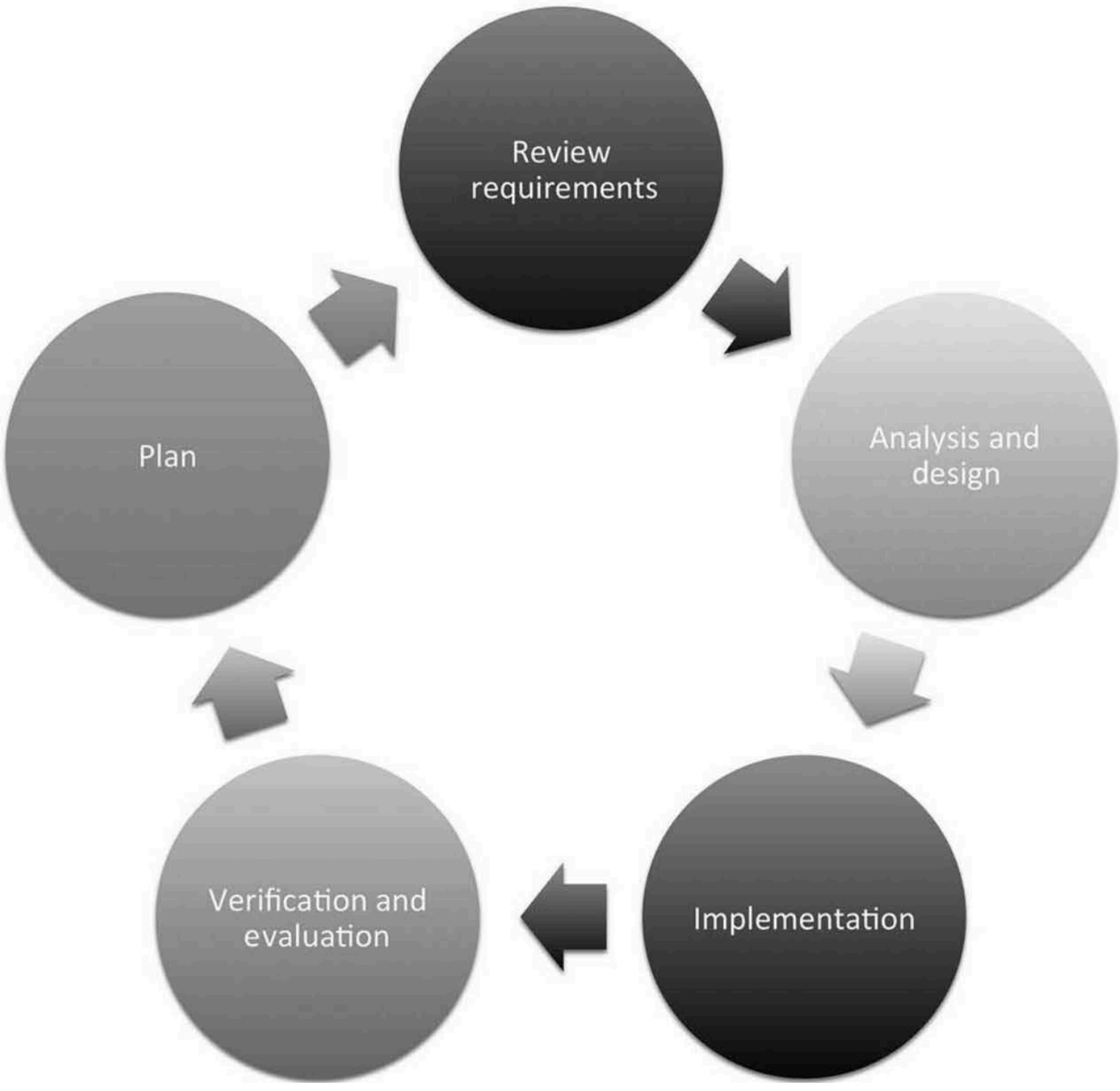

Figure 4.1
A traditional game development cycle.

The Values at Play heuristic is iterative, too, but focuses on values during the process of design and building (figure 4.2). In the standard cycle, a developer might ask, did we build the game the customer wanted, and does it respond sensitively to player input? Throughout the VAP cycle, the conscientious designer asks questions, such as, are the values expressed in this game the values that we want to express? Did we implement the values discovered at the onset of the project consistently throughout the game in a meaningful way?

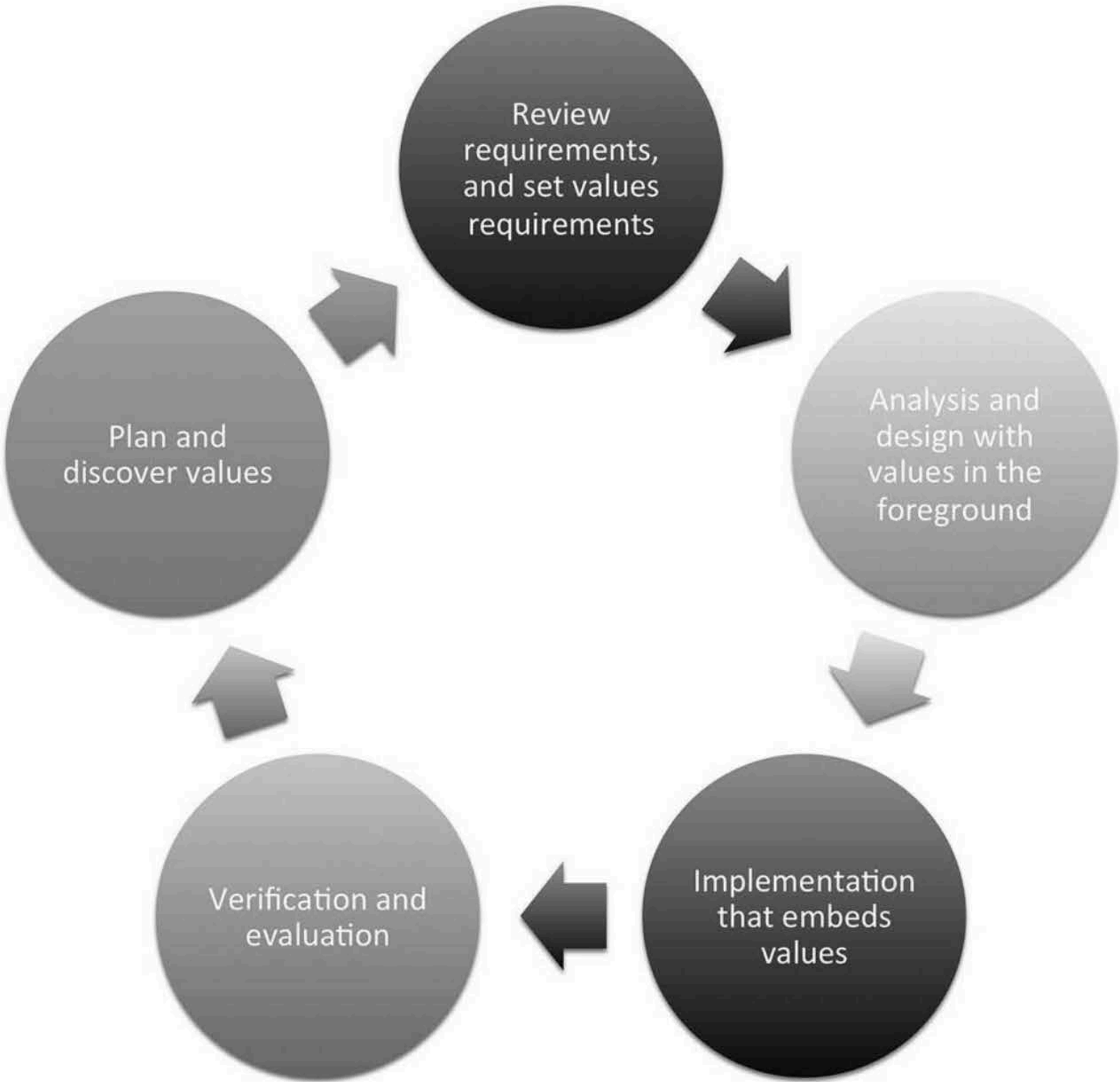

Figure 4.2
The Values at Play development cycle.

Source: This diagram is adapted from Mary Flanagan (2009, 257).

Discovery, implementation, verification: This three-component heuristic helps designers maintain a focus on values, to find expression for those values that they are committed to, and stay alert to observe and eliminate any undesired values that might creep into the game. The next three chapters provide a more detailed account of each of these three components.

5 Discovery

A cancer prevention organization sought out our friend Kris, who has designed many award-winning, innovative games, to see if he might design a mobile game for their charitable organization. A donor to this nongovernmental organization (NGO) felt strongly that the human papillomavirus (HPV) vaccine—a vaccine designed to protect people from the virus, which can cause cervical cancer—was the key for the future of women's health around the world. The donor asked the NGO to push for the vaccine to be distributed in a developing nation, and a country in Africa was chosen as the site for this push. When speaking with Kris, representatives of the NGO started out discussing youth education and focused on the values of well-being, health, equity, access, and empowerment. But when Kris learned that the NGO wanted a mobile game to target eight- to twelve-year-old girls so that they would persuade their parents to help them get vaccinated, he began to question the group's assumptions. Do eight-to twelve-year old girls in this country have mobile phones in order to play a game? How would they be able to sway their parents (often their fathers) to take time from work and travel with them for the vaccination, particularly as it required three shots over three consecutive visits. Kris concluded that the NGO representatives were deeply out of touch with the values and lived experiences of the potential players. Despite the best of intentions, their hopes of changing deeply entrenched cultural values and ways of life with a single game were wildly unrealistic.

Perhaps the worst aspect of this proposal was assessment. When Kris asked the NGO members how they would measure success, they said that they would ask people if they liked the game: "After all, there is no way to measure who is getting a vaccine and who played the game." With criteria for success unconnected to core aims of the game, Kris decided not to engage with the project. The NGO sought a game that would explore an issue, change minds, and even change behavior. But they failed to pursue values discovery in sufficient depth to learn about the cultural expectations and values of the key constituency—its users.

Discovery, as we define it in Values at Play, incorporates two activities: (1) locating values and (2) defining them. The outcome of the first is a set, a list, if you will, of such values as cooperation, peace, fairness, benevolence, tolerance, creativity, liberation, generosity, autonomy, and empathy. Listing, however, is not enough because values as we conceive them for this book, including many with the greatest political, cultural, and historical significance, such as equality, justice, and autonomy, can be abstract, complex, and often ambiguous. Designers

need to unravel ambiguity and develop or embrace a definition of relevant values that is sufficiently concrete to guide design—in other words, to be put to work in the context of a game.

The processes of locating and defining values apply to the values that are embodied in the functional description of a game (that is, in the aims of a game) as well as to those that crop up as side effects of myriad other design decisions (call them collateral). Both are revealed in an ongoing process of discovery that starts early in a game's conception and development and continues until all design elements are finally settled.

Locating Values

The VAP heuristic for locating values in a given game project is to consider the diverse influences that shape its values. We suggest four sources as a useful starting place—key actors, functional description, societal input, and technical constraints.

1. *Key actors:* The people involved in creating the game.
2. *Functional description:* The explicit statement describing the game.
3. *Societal input:* Cultural contexts, standards, and other external factors bearing upon the game.
4. *Technical constraints:* The software, hardware, and other game elements that together constitute the game.[1]

1. Key Actors

Games are built by people, for people. Invariably, these people, be they funders, publishers, journalists, players, and designers enter the process through a variety of pathways, explicitly and implicitly.[2] The influences of creators and players may be fairly direct. Funders and publishers who are seeking to serve a global audience may favor values that will increase mass appeal and commercial success. Commercial games, for example, must respond to player expectations of how characters are portrayed and stories are told, which in turn reflect particular palettes of values. When large teams with many layers of management and oversight are involved in the production of a game, all of these people may have a hand in shaping the game's values, whether through explicit intervention or through inadvertent, smaller choices along the way.

The values of designers and individual members of design teams, surprisingly,

are often overlooked in this process. Even designers who are not engaged in top-level decisions can have profound effects on a game. The designers' ethnic origins, cultural groups, socioeconomic and political backgrounds, gender identities, education, and disciplinary training shape their perspectives and preferences. These backgrounds can influence which projects they choose to work on as well as the design details they include in their projects.[3]

Keita Takahashi, designer for the 2004 PlayStation game *Katamari Damacy* (Namco 2004) (figure 5.1), noted his individual intentions for the project:

Figure 5.1
A street scene from *Katamari Damacy* (Namco 2004).

> I am influenced by what's going on in reality, and it often shows in what I create. I am sure the terrorist attacks and the war in Iraq, which started just as we began development, affected me in some degree. Of course, I didn't really create this game with a direct reference to the concept of peace, but there are some things that I consciously chose to do here. There is a lot of aggressiveness and violence in games nowadays. I do not denounce this violence completely, because it's a part of human instinct and is a very straightforward thing to express. What I tried to do was not only bring peaceful feelings to the game, but also create something totally different, which would be more exciting than just being peaceful. I wanted to stimulate human instinct on a different level.

Sometimes relevant actors might push in opposing directions. In the case of the development of a Nintendo DS cheerleading game, for example, the lead designer noted that she did not wish to create stereotypically "vapid" cheerleader characters, even though the target audience expected them. When the play testers found that the game veered from their expectations, they rebelled and demanded ditzy cheerleaders. This put players at odds with the members of the design team committed to values of equity, creativity, and so on. Although the design team could not alter the cheerleader theme or aesthetic, they created features to allow players to design uniforms. They also introduced a fashion competition: players who perform well earn other team's uniforms when they beat them. The designers hoped that adding to the game's complexity would make the surface stereotypes less central to the play experience and foster creativity as a value.[4]

Experience with the cheerleading game reveals the influence of another key constituency in values—players. As revealed in surveys, informal feedback, and systematic study, players' preferences may shape design in ways that are relevant to values. The market performance of completed products also constitutes an important, although less direct, index of users' values. User-driven innovations (particularly in open-source contexts and in user-generated content such as add-ons and Facebook games) can drastically change the values expressed in games. With the rise of the iterative design process and participatory approaches, designers and developers seek to incorporate feedback from users early in the design and development process.

The push and pull of the preferences and values of diverse constituencies was a significant factor in the development of Mary Flanagan's *The Adventures of Josie True* (2000), the first online adventure game for girls (figure 5.2). Flanagan and her student team drew over forty character portraits, some of which were nearly identical to Barbie and other well-known female characters. The portraits were then shown to middle-school girls. When girls were asked, "Which of these characters might be the heroine of a new game?," they overwhelmingly chose drawings resembling Barbie. But when asked, "Which might become a friend of yours?," the girls overwhelmingly chose the character who ultimately became Josie True. At this juncture, the conscientious designer has a choice—to stay close to predictable, existing commercial expectations or to risk a new look, style, attitude, or behavior for a character. The designer chose the latter to fight stereotypes and promote the values of equity and fairness of representation. Players of the finished game commented positively on the character.[5]

Figure 5.2
Josie, from *The Adventures of Josie True* (Mary Flanagan 2000).

The longer a game has been been in use the greater the opportunity for designers to use iterative design cycles to adapt to users' values and preferences.[6] Nowhere has this been better in evidence than in Blizzard's *World of Warcraft* (2004). In early versions of the game, players were allowed to select their character within specific parameters. They selected a character belonging to a faction and a race, with each race possessing characteristic strengths and limitations. An Alliance Gnome, for example, could be a Warrior or a Warlock but not a Priest. Players had to choose their character's class and race combination wisely because these factors could benefit or hinder game play. Responding to an onslaught of player petitions, however, Blizzard changed these constraints to allow for more flexible character combinations. These were primarily visual rather than instrumental—a choice about aesthetics, not functionality. Further, by changing the financial models for character selection, Blizzard allows players to pay extra to alter a character's race midgame. Players also can pay extra to have their charac-

ters change factions from Horde to Alliance or vice versa. These changes in the game have, interestingly, been a source of extra revenue, while providing players greater latitude to express their preferences and values.

This chapter's sidebar (at the end of the chapter), written by designer Frank Lantz, is an incisive account of how he and members of his company, Area/Code, handled some value questions in their 2010 Facebook game, *Power Planets* (figure 5.3). Designed for the Discovery Channel, the game promoted a television series about alternative energy. The design team was committed to the big-picture question: "What values are at play in the subject of mankind's energy consumption?" By focusing on the complex issues of how humans consume energy, they were able to shape specific design decisions along the way. Lantz's account is an informative tale of values discovery.

Figure 5.3
A miniature planet, from *Power Planets* (Area/Code 2010).

A final example of value discovery comes from Flanagan's recent series of games addressing biases and stereotypes, particularly around barriers to women

in science, for the National Science Foundation. Flanagan and her team at Tiltfactor prototyped several games, such as *Awkward Moment* (Mary Flanagan 2012a) (figure 5.4), that use novel strategies to reduce bias.

Figure 5.4
Awkward Moment, a game that helps reduce bias (Mary Flanagan 2012a).

In this case, key actors were designers, on the one hand, and, on the other, funders (scientists and government officials). Although, initially, the unexpected approach taken by designers was surprising to the funders, testing data persuaded them of the game's efficacy. The game *Buffalo: The Name Dropping Game* (Mary Flanagan 2012b) (figure 5.5) prompted a similar skepticism, later overcome. These experiences reveal the important tug and pull generated by varying perspectives of diverse key actors.

Figure 5.5
Buffalo, a game that highlights feelings of injustice (Mary Flanagan 2012b).

Because there is a wide diversity of key actors whose desires, preferences, and values shape a game, differences and conflicts almost certainly will arise and will pull the design in diverse directions. In the microcosm of creating games, designers confront a plurality of values. Should designers' inclinations win out over the audience in this tug of war with values? Is giving players exactly what they expect or want a good idea? Should it matter that player desires are shaped by marketing materials, prior games, and the dominant culture? Should the designer's values trump the values of the marketplace, or vice versa? These and other similar questions of responsibility are often neglected in the moment-to-moment decisions that shape game creation. Although we do not have general answers, we are certain that these questions should be asked. Specific responses depend on specific features of those cases (such as the nature of the game, its audience, its context, and so forth) and on the nature of other sources of values, to which we now turn.

2. Functional Description

Imagine you visit a website and read the description of a game, or see an adver-

tisement for it. Or, perhaps you are part of a design group, articulating the early goals and ideas. At these moments, you will find formulations of a game's functional description. Typically written at the start of a game development project, the functional description may or may not refer to values. When it does, it offers a top-level guide to values that the game developers intend to express.[7] This is what we mean when we identify functional description as one of the key sources of values at play in a game.

As a designer, you may be creating a game with a particular value in mind. You may be interested in changing people's perspectives, calling them to action, or motivating them to advocacy. Your game may be designed to cue people's attention to environmental conservation, to stir empathy for the victims of war, or to inflame their indignation over racial, cultural, religious, or gender biases. You may be seeking to deepen their understanding of complex social issues, such as strife in a certain region, natural disasters, or global warming. On a more personal scale, you may be interested in a game that explores friendship, cooperation, solidarity, generosity, love, or security or one that stimulates creativity, joy, tolerance, liberation, autonomy, or independence. If any of these is one of the primary aims of your game, you are likely to express them through its functional definition.

Functional descriptions of games can include values, but they also feature prominently in general technology design. Although values like accessibility and fairness may draw the attention of designers as they develop or critique educational software and search engines, they also are incorporated into the very DNA of a system when they are aspects of its functional description. Thus, when designers set out to develop fair search engines or accessible educational systems for the disabled, values explicitly drive and define a system's shape. Privacy, for, example, has inspired a growing host of "privacy-enhancing tools" for Web browsing, email, social media, and more. The expression of values in functional definition is evident in many games.

The Web-based game *Darfur Is Dying* (Susana Ruiz 2005) was created by a student team from the University of Southern California and published by mtvU (figure 5.6). The goal of the project was (1) to raise awareness of the humanitarian crisis in the Darfur region of western Sudan, which was caused by a conflict between Sudanese government troops and non-Arabic militias, and (2) to generate a grassroots movement among college students in the United States and other Western nations to end the conflict through government intervention. By positioning players as refugees, the game aimed to stir empathy, provoke engagement with the crisis, stimulate efforts to provide basic survival goods, restore community, and establish democracy and freedom.

Figure 5.6
A scene from *Darfur Is Dying* (Susana Ruiz 2005).

Quest Atlantis (Sasha Barab et al. 2005), a game that was developed by Sasha Barab and his research team at the University of Indiana, engaged children ages nine to twelve in dramatic play involving both online and real-world learning activities. Primarily focusing on game quests, the project's definition is a rich source of values:

> *QA* combines strategies used in the commercial gaming environment with lessons from educational research on learning and motivation. Participation in this game is designed to enhance the lives of children while helping them grow into knowledgeable, responsible, and empathetic adults. [8]

The website for *Quest Atlantis* also includes a discussion of the project's commitment to values:

> The QA project will foster an awareness of seven critical dimensions in order

to actualize them in the lives of children:

- Creative Expression—"I Create"
- Diversity Affirmation—"Everyone Matters"
- Personal Agency—"I Have Voice"
- Social Responsibility—"We Can Make a Difference"
- Environmental Awareness—"Think Globally, Act Locally"
- Healthy Communities—"Live, Love, Grow"
- Compassionate Wisdom—"Be Kind"[9]

The functional descriptions of both *Darfur Is Dying* and *Quest Atlantis* disclose key goals of the project and include explicit commitments to values.

3. Societal Input

The range of values that individuals bring to technical projects is constituted partially (some would say entirely) by society. Yet despite the coconstituency of individuals with societies, collective and institutional societal sources of values are influential and worthy of special note.

Even a simple kitchen appliance that toasts bread must meet societal standards: its plug must fit into a wall socket, and it should not catch fire or short out the electrical system. Information systems and infrastructures (such as Web browsers, network switches, and email systems) should meet standards of robustness, security, and confidentiality. Other performance standards—energy efficiency for appliances, gas mileage for vehicles, emission limits on industrial machines—reflect societal expectations. With video games, industry ratings warn parents of the presence of explicit sexual content, foul language, violence, and other "mature" content, and these warnings may shape games as designers strive to meet or avoid particular ratings. Whether the intent is a commitment to "good, clean fun" or simply to sell more games, the result is a media product shaped by societal standards that are embodied in these ratings' schemes.

As a source of values, societal input can be deeply politically charged. In the 1990s, a U.S. state department of education objected to an educational game about American history that included gay rights activism. Although the designer (coauthor Flanagan) was inspired by values of equity, inclusion, and fairness, the education department threatened to forbid schools from purchasing the game if it included information on gay rights activism, and the publisher required the designer to remove these parts before it would release the game. In this way, societal mores became a source of values in the design of the game through the

direct intervention of the publisher (through its desire to presumably increase sales) and the indirect intervention of the state authority (through its mandates). The mechanisms of influence can vary significantly—from explicit demand (as in this case) to the indirect, sometimes subtle influences of cultural and historical contexts.

4. Technical Constraints

Beyond societal standards, functional definition, and key actors, the technologies on which games are layered impose their own constraints and affordances. Creators of games face a multitude of major and minor decisions during the design and development phases, and these decisions may have implications for values. Some emerge as a result of explicit design choices, and others emerge inadvertently as designers focus on producing some other effect. As noted in the discussion of game elements in chapter 3, almost every aspect of a game can be freighted with values, offering both opportunities and dangers to those at the design helm. We like the term *collateral* for these values because although they do not steer a project from the outset, as do those in a functional description, they appear along the way to an astute designer, often as a result of technical limitations and affordances, as significant side constraints.

Values that emerge from technical decisions are common in nongame contexts, too. Interface developers who use visual cues inadvertently discriminate against visually impaired users, thereby undermining the value of inclusiveness. Location-based services, which are now common on mobile devices, can allow third-party surveillance of individuals, a potential violation of privacy. Some search engines prioritize results according to advertising fees, impinging on transparency and fairness. In each of these cases, designers may have focused on efficiency or utility, and they may have been working around limitations of screen size, performance, bandwidth, formalism, and a myriad others. But their decisions, whether intentional or forced, have consequences in the realm of values.[10]

The same is true in games. A driving simulation game may not specify any particular values among its aims, but designers nonetheless must make decisions about car models, car colors, driver avatars, player point of view, obstacles in the car's path, and more. As these decisions accumulate, the designers may find a culture emerging that expresses a set of values in their design choices.[11] This is an example of the "collateral" values that are mentioned in the introduction to this chapter: sometimes values appear in games not intentionally but as a result of other design decisions. In deciding a game's storyline, resolution, and arc—as well as game goals, scoring, and available actions—a designer may contribute to a player's experience of embodied values.

Consider the introduction of Real ID, a feature on the online gaming service Battle.net. With Real ID, game players' friends appear under their real-life names on a "friends" list, alongside whatever characters they are playing on any of the Battle.net games (figure 5.7). Players see their friends' real names when communicating in-game, chatting, or viewing their character's profile. Players do not have to recall which friend is playing under what character on what server.

Figure 5.7
Many guilds are created among friends. Here are a group of one of the author's friends in their guild *Varsity Cheer Squad*.

Previously, players could chat or perform certain game actions (such as running dungeons) only with others on the same server. But with Real ID, they can chat and run a dungeon with those on other servers. Previously, raids in *World of Warcraft* were server-specific. Now, a battle group is a collection of servers, and instances belong to that battle group. Before Real ID, the collection of players was anonymous because players controlled a variety of characters with different names. With Real ID, players may group with their friends instead of inheriting strangers in a raid group. The active community of the server ran its own forums and battles, so the expansion from local to global has affected the personal connections expressed in play. The aim of Real ID was to open up friendship and community outside the technological paradigm of the server-based community. But this technical decision had other effects. There was a loss of anonymity and

privacy, a loss of loyalty to one's own server community, and a loss of sociality as mixing with strangers in a group declined. Such are the collateral results that designers must be aware of when dealing with the technical constraints of gaming systems.

Other technical constraints support values whether the designer knows about it or not. Flanagan's Tiltfactor Laboratory conducted a study on learning about disease spread and systems thinking through a game that was implemented nearly identically as a board game and an iPad game. In randomized controlled experiments, the researchers found that players played the game 10 to 20 percent faster on the iPad and spoke to each other 10 to 20 percent less during turn-based play, even though conditions for play among the play sessions were identical. This study showed the design team that some affordances are particular to each medium and need far more study.

Defining Values

Thus far, we have answered the question "What values are at play in this design project?" by focusing on locating values. But answering the discovery question also involves defining these values, not necessarily to provide a universal analysis of relevant values but to develop a clear and consistent meaning. Ethical and political values (such as justice, fairness, privacy, tolerance, autonomy, and liberty) are conceptually abstract, controversial, and notoriously difficult to define. Yet when we reach for them to describe a political system, a relationship, an organization, or a competition, we have in mind definitions or interpretations that are concrete, specific, and operational. Transforming a value from an abstraction to a fully articulated concept makes it accessible to design and capable of influencing architecture and features. It is the work of definition and analysis that forms a necessary bridge between abstract value concepts and concretely articulated conceptualizations able to guide a designer's hand.

Defining values in operational terms is more than employment for idle philosophers. If values are carelessly or inaccurately defined, if those involved have very different understandings, or if the substantive nature of the value is incorrectly construed, then even a beautifully designed, well-executed system can miss its mark. In many instances, implementation—the translation in design from idea to feature (discussed in the next chapter)—may take place implicitly and without much ado. With controversial values, however, good intentions and technical competence may not be enough. The designer also must be guided by a sound and reflective grasp of the value concept.

Consider some examples from nongaming technology. Imagine you are designing a digital repository of medical records and are concerned to protect privacy. How you define it—whether as patient control over information or as appropriateness of information flow[12]—will make a difference in how you design your repository. Or consider openness, a value that has been controversial among software designers, especially those within the free and open-source communities. Does an open system mean that anything goes, or can a system be considered open even if some constraints are placed on how it can be developed? Similarly, can an open network place constraints on those who join or connect, or can they place requirements of protocol or good behavior? Well-defined concepts (privacy, openness, or any other value at play) are of more than philosophical interest: they have genuine consequences for the technologies in our lives.

In the game world, you might be interested in promoting generosity. How should this value be understood? In some massively multiplayer online role-playing games (MMORPGs), players who have acquired more powerful resources give their older, less useful items to lower classes of players. This sharing is not required by the game, and typically there is no explicit reward for gifting the items. As in real life, however, sharing goods and objects can incur social benefits, such as loyalty and increased reputation. Players value these kinds of social rewards, and thus some form of generosity has become common. But what if generosity is rewarded by the system? In *Asheron's Call* (Turbine 1999), in-game "mentors" keep a percentage of the experience points earned by their mentees. If generosity is rewarded in a game, is it really generosity? Do material rewards eliminate the possibility of genuinely generous play? And if there are no explicit rewards for generosity, does this encourage players to focus on social rewards, such as friendship or teamwork? On the other hand, if experience points or other reward systems are used to encourage generosity, how does this influence relationships between mentors and mentees? Does generosity require that you give something to someone else or that the thing you give is something of value? Does it require that the giving *hurt* or diminish the stock of the giver? Or must it merely increase the stock of the receiver?[13] Such questions must be answered by the team to define the value adequately.

Cooperation requires that people work together toward a common end. But must the work together be fully voluntary, or is it still cooperation if coercion is involved? How does one define loyalty? Does it call for unfair favoritism or merely a commitment to the good of another when all else is equal? Crucial to this exploration are the site-specific negotiation and definition of these values. The range of interpretation available to both the designer and the player is vast.

The research project RAPUNSEL (2003–2006), undertaken by coauthor Fla-

nagan and her colleagues at New York University and funded by the National Science Foundation, was intended to teach basic computer science to girls from low-income backgrounds.[14] The designers, in other words, sought to promote social justice through gender equity. These broad, abstract values could be made real through improved mastery over a high-status skill. Before they could design the game, however, the team needed to discover the values at play (justice, equity) and also define them. Their goals depended on several key philosophical and empirical propositions. One is the prominent role of information technologies in contemporary Western societies. Another is the importance of proficiency in quantitative and analytic skills as a source of social and cultural status, including high-paying jobs. "Programming is the most powerful medium of developing the sophisticated and rigorous thinking needed for mathematics, for grammar, for physics, for statistics, and all the 'hard' subjects," Seymour Papert has asserted: "I believe more than ever that programming should be a key part of the intellectual development of people growing up."[15] Studies of women, however, have unequivocally revealed low interest and achievement in these areas by at least early adolescence. As a result, women have limited access to many well-paid, high-status jobs.[16] RAPUNSEL researchers designed a game to function as a learning environment for computer programming that would appeal to middle-school girls. Its aim was to intervene in a dominant pattern of inequitable distribution and access of goods. Accordingly, justice and equality were defined operationally for the RAPUNSEL project game, *Peeps* (RAPUNSEL 2006), in terms of increasing and access to higher-paying, higher-status professional employment.

Discovery for Designers

Designers and other stakeholders shape games in ways that are relevant to values. Players also bring values and expectations to a game, shaping them directly through feedback and play, and indirectly through the marketplace. Societal factors generate background expectations, and technical constraints and affordances yield outcomes with values' dimensions. Prior to any of these, values may be (though need not be) expressed in the very conception of a game through its functional definition.

The work of discovery is specifying, seeking, finding, understanding, conceptualizing, articulating, and defining values that are relevant to your game. It may take place at any time during design—before it begins, through completion, and even beyond as values emerge in play itself. The discovery component makes conscientious designers astute and systematic in their awareness of values at play. It is the necessary foundation for our active engagement with them.

The Power of Values

by Frank Lantz, Creative Director and Cofounder, Area/Code, Zynga New York

In 2010, Area/Code developed a Facebook game called *Power Planets* for the Discovery Channel. The game's goal was to promote a TV series about alternative energy sources called *Powering the Future*. The experiences that we had while creating this game may serve as a useful example of how thinking about values influences the game design process on multiple levels.

Let's start with the values that were involved in our taking on this project in the first place. *Power Planets* is a work-for-hire game development project. Its raison d'être is to drive awareness of and interest in a television series. It is, in a word, advergaming, and that's not a pretty word. Many of Area/Code's projects were games of this type. How did we reconcile our game design values (a desire to make meaningful, high-quality, innovative games) with the vulgar demands of consumerist propaganda? To be honest, we did not have to try hard. We had found that this context for creating games provided a surprising amount of creative freedom. Our interests were primarily formal, and our main passion was game systems and structures. The requirement to express the themes of some existing media entity was a kind of arbitrary constraint that we actually found quite useful. Moreover, there is a certain amount of ambiguity about what makes a successful game of this type. More often than not, the creative goal of making a good, original, and interesting game lined up closely enough with our clients' strategic goals.

But we did take seriously the obligation to explore the themes that we were given. In the case of *Power Planets*, the TV show that it promoted had not yet been created, so we had only an outline of the subjects that it would explore. This was essentially a broad overview of the challenges related to energy consumption over the next few hundred years.

What values are at play in the subject of energy consumption? We use energy to improve our lives, to achieve our goals, to satisfy our preferences. There are different kinds of energy, each with its own costs and benefits. Some of these costs take the form of negative externalities: burdens like pollution are shared by a community beyond those getting the direct benefit of the energy consumption. Sometimes these burdens are distributed not geographically but across time: future generations will shoulder some of the costs of current energy consumption.

The design team spent time researching and discussing these issues. Each member of the team brought his or her own opinions to the mix, but eventually we came to the conclusion that this issue is contentious because it's genuinely complex. None of us felt there were easy truths that a game about energy should embody or express.

Like many contentious issues, energy policy mixes together math problems and values problems. By math problems, I mean empirical questions, questions of fact, engineering problems. Math problems alone can be difficult. We can disagree about matters of fact ("How much oil is left?"). We can disagree about the proper way to frame the problem ("How far in advance of running out of oil should we begin transitioning away from using it?"). We can disagree about the best type of solutions to pursue ("Should we focus on using oil more efficiently or on finding better ways to replace it?"). In general, however, we understand how to approach math problems. We know the kind of criteria to use for measuring success and the type of tradeoffs that we will have to make to get there. We want to maximize our benefits and minimize our costs. Once we're in the realm of numbers, there's no need for the kind or ferociously emotional dispute that surrounds energy use and environmental impact.

But before we can enter the realm of numbers, we have to agree on far more nebulous matters: What constitutes a benefit, and what constitutes a cost? Which benefits are better than others, which costs are worse, and by how much? This is the realm of values. How much is unspoiled wilderness worth? How costly is diminished biodiversity? What exactly is our moral obligation to our neighbors, to our future selves, and to our children's children? These questions cannot be answered in technical terms, yet math questions and values questions have become messily entangled in the public discourse on energy usage.

Games, too, often merge these kinds of problems together. Often they do so on purpose, as when a single-player game makes the player choose between doing something to achieve the game's explicit goal and doing something that seems morally better within the game's story (for examples, see every triple-A game made in the past ten years).

Luckily, we weren't making a single-player game. We were making a Facebook game, and we decided to use the formal qualities of this platform to pry apart these two kinds of problems. The goal was to make a game whose mechanical center was a big, well-defined math problem and whose value problem resided entirely in the social domain in the relationships between the players.

Specifically, we decided to focus on what we considered one of this issue's

biggest and most interesting value problems—our moral responsibility to the future. Much of the difficulty of energy issues involves thinking through consequences on a planetary time scale. It's hard to determine what moral weight we should give to the preferences of the people who will live long after we've died. After all, it's hard enough for humans to figure out the proper weight to give our own future preferences. That's why we drink too much, overeat, procrastinate, and avoid exercise. Attempting to delineate our responsibility to future generations is like multiplying that problem by many orders of magnitude. Intuitively, we feel that there is some responsibility. When the future generation is our own children, our feeling of responsibility is enormous. But when the future generations are more distant or not directly related to us, that feeling is more tenuous. We feel it is right to sacrifice some of our own goals and desires to benefit these future people, but how much? And what if we frame this relationship as one of harm instead of benefits? At what point do our rights directly impinge on theirs? No discussion of energy policy and environmental impact can happen without considering these questions, but they are questions that our brains find difficult to contemplate, much less answer.

Power Planets used the power of gaming to explore this issue. In the game, the player manages a small, simulated planet, earning points by building and powering structures that serve the needs and wants of inhabitants. But players are in control of their planet for only a limited amount of time because every few days the game switches planets between players: everyone's current planet is given to someone else to manage. After five hand-offs (called "epochs"), a planet was retired. The planet-management simulation itself is filled with complex tradeoffs that reflect the challenges of energy strategy. Different types of energy production had different levels of effect on the planet's environment, which in turn affected the efficiency of the point-producing structures you built. Oil and coal were cheap and powerful but finite and highly polluting. Alternative power sources, like wind and solar, were limitless and clean but required expensive research and were less efficient overall.

Every planet you managed was like a little puzzle involving limited resources and overlapping constraints. You had to make complex decisions about what types of structures and power systems to build and when and how to transition from one type of power to another. *Power Planets*, however, was about more than just the moment-to-moment tradeoffs you encountered in managing the simulation. We wanted the real focus of the game experience to be the tension between the immediate impact of your decisions and their long-term consequences. How would your decisions affect the players who inherited your planet "downstream"?

Our goal was to have the player constantly feel the desire to squeeze as many

points as possible out of the planet under their control and then to consider how that would affect the next player down the line. We wanted players to experience gratitude when they received a planet whose previous owner had kept it in great shape, rationing scarce resources and investing in long-term research. And we wanted players to experience the pain of receiving a planet whose previous owner had turned it into a smog-choked, strip-mined wasteland.

During the design process, we struggled with the question of how to express the tension between the explicit goal of maximizing points and the implicit goal of cooperating with other players. Should we have two different kinds of points or a reputation system that allowed players to rate each other? Ultimately, we decided that the best option was the simplest: the goal of the game was to score the most points, and the leader board tracked each player's average score per planet. This encouraged players to get the most points they could out of every planet they managed. Any negative consequences for sticking their friends with a hopelessly ruined planet would be felt purely in the social realm and in their conscience.

There was, however, a second leader board for planets. This board ranked each completed planet by the total points that it produced over its lifespan, along with the five players who had managed it. The juxtaposition of the two leader boards highlighted the tension between the two ways of approaching the game. You could play selfishly, without considering the effect that your actions would have on other players, or you could play altruistically, balancing your own gain with some consideration for others. There was no way you could be on top of both leader boards.

In fact, getting onto the planet leader board required a certain kind of faith. To maximize the overall point gain across five separate epochs, players needed to use the limited resources under their control to set up situations that would pay off long after their epoch was over. They compromised their own profit to ensure that future players would survive and prosper. Who inherited a planet, however, was beyond the players' control. If the next player was selfish or stupid or both, then your sacrifice was in vain. The winning planets would be those lucky enough to string together five players who had each decided to take this leap of faith. Looked at in this way, you could see the choice to play altruistically not as a rejection of the game's math problem, but as an attempt to solve a larger, subtler math problem, one that required a mastery of the game's mechanical systems, collaboration with distant, silent partners, cleverness, empathy, luck, and trust.

There was no "correct" way to play *Power Planets*, no right or wrong choices,

no message that we wanted to transmit about the proper way to manage our energy needs and limited resources. We wanted to create a game in which the elusive qualities of these issues were highlighted, the small details magnified, the vast incomprehensible scale of the problem compressed into something that could be considered and passed on to a friend.

For us, this was the ultimate lesson about values at play that we learned from the process of creating *Power Planets*. Games can explore the complicated and ambiguous world of values because they are dynamic models, simulations, and imaginary spaces and also because they function as stylized forms of social interaction. Games are a way for people to engage with issues through the entanglement between a dynamic system and the aspects of the world that it points to and reflects, as well as through the entanglement between those things, ourselves, and each other.

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.

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 success-

ful 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]

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.

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. 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.

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

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).

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

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

Values of 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.

7 Verification

After discovering and implementing values, conscientious designers will want to answer a key question: did it work? Verification involves assessing whether efforts to integrate values have succeeded. As is suggested in chapter 4, an iterative process means that this question—verification—should not be reserved for the very end of production but asked at every step of the way.

Verification is crucial to any technological system. It is relatively simple to verify that a toaster achieves its aim of browning bread evenly without blowing a fuse. It is somewhat more difficult to verify that a Web search engine finds what users are seeking. Verifying values in games poses even greater challenges, primarily because assessment must take into account the complex interdependencies among the game (as artifact), its players, and the context of play. Verifying also must confront a different type of challenge from skeptics who ask, "Do you really think that playing a game can save the environment, bring about world peace, or make individuals kinder, more sensitive, and less biased?" Responding to these challenges means describing how Values at Play might be verified (the primary task of this chapter) and identifying what is being verified (what designers mean when they say that a game embodies, expresses, promotes, or supports a given value or set of values). One method for discovering whether a game that promotes energy conservation actually embodies conservation might be to measure players' energy conservation before and after playing the game; luckily for the complex range of methods there are also other methods.

The substantive contribution of this chapter extends beyond our review of processes for verifying claims made about values at play. We also aim to broaden the understanding of what it means, in the first place, to claim that values are 'in' a given game. We suggest three interpretations for this claim: One, noted above, is as a claim about the ways in which players' behaviors, practices, activities, and ways of doing are affected. A second is whether the game expands and deepens players' understanding and appreciation of target values and closely allied issues. And, a third is the extent of a game's systematic impact on players' attitudes, empathy, or affect.

This chapter discusses various ways that designers might proceed with the verification process. Drawing on standard practices followed in game design, in software systems development more generally, and in social sciences research, it reviews methods that designers might adopt, concluding with real-world situations in which designers put research methods to work in conducting verification.

The Verification Process

According to the iterative design process introduced in chapter 4 (see figure 4.1, A traditional game development cycle), the usual steps in designing a video game are planning, review of requirements, analysis and design, implementation, and finally, verification. The process is cyclical, involving constant review and testing to ensure that the final products meet the initial demands. Even in the earliest stages of a project, verification occurs as initial versions are play-tested by various groups. Most familiar to game designers is testing via prototypes,[1] which are highly useful in experimenting with particular parts of a given game and the values that emerge.[2] In technical scenarios, modes from agile programming might aid in systems for which requirements change frequently.[3]

Within an iterative process, there are a number of ways to conduct verification. In engineering and software development, the process is often referred to as validation and verification (V&V). Various criteria can be used to ensure that a given artifact fulfills its objectives. The first major criterion is functional: Did we build the right thing? Did we build the house or digital game that the customer wanted? Is the kitchen in the spot where the customer wanted it to be? Does the game play the way that it was supposed to? This might seem to be the core question, but there is more to the process. Continuing with the kitchen example, sometimes when you put the kitchen in the spot where the customer wants it, there is unfortunately no place to put the exhaust fan that is required by building codes. Thus, the second criterion in reviewing a work is experiential: Did we build it right? Is the house's construction of high quality, and does it conform to building codes? Does the game's software operate in all required browsers?

Figure 7.1 shows the types of verification that are considered in the standard software design cycle: requirements of the system are reviewed and verified, the design is verified, the actual code and hardware are created and verified, and the process itself undergoes review. Many nuances are involved in traditional software verification, but the values that appear in traditional verification involve only the "useful" values of reliability, efficiency, and robustness. When human values are involved, validation must go beyond these categories of assessment. Each category must be augmented to bring values into account.

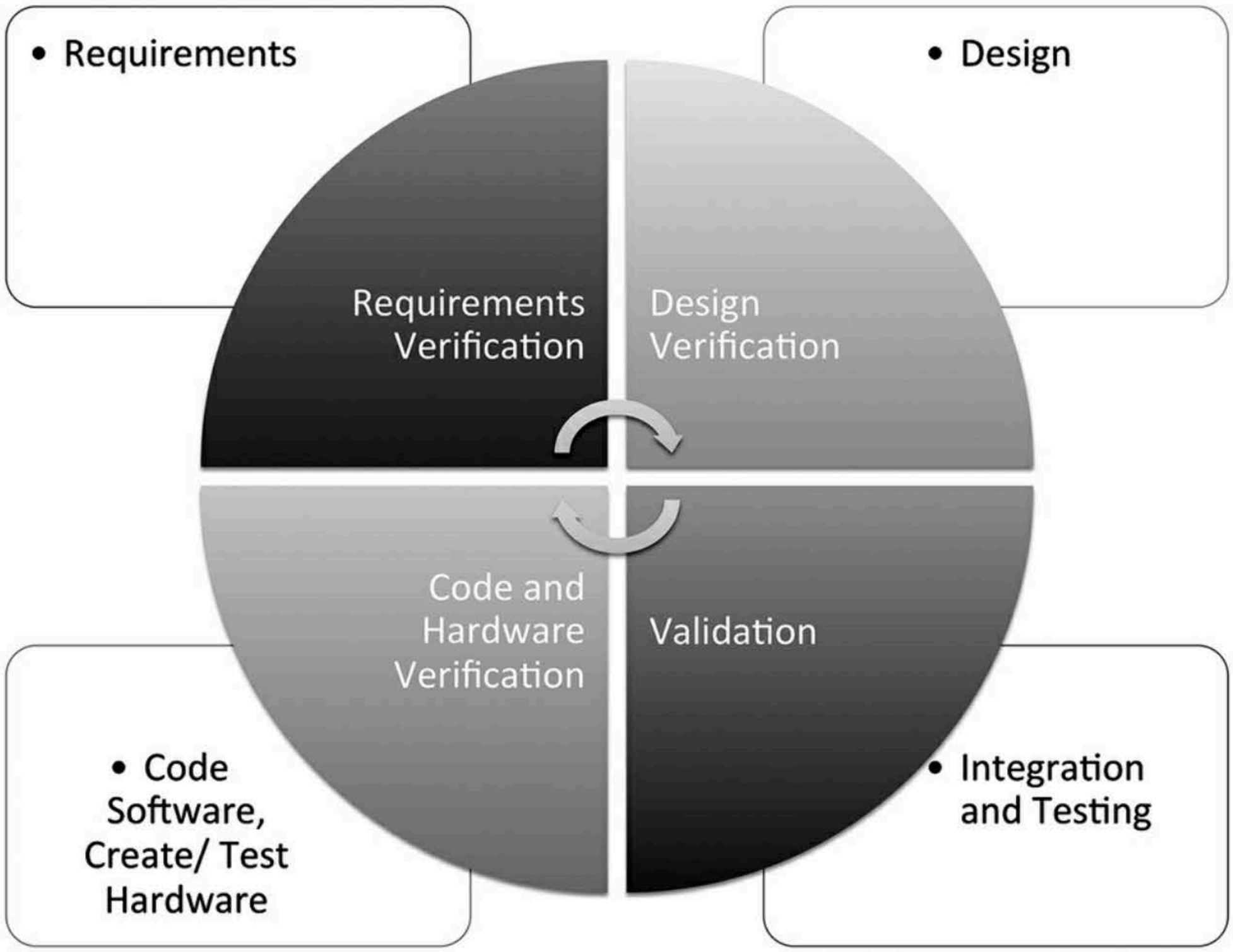

Figure 7.1
Software verification through an engineering lens.

New questions about values in games need to be added to the traditional strands of verification. As noted in chapter 4, the Values at Play model inserts values into the iterative software design process, so the conscientious designer must plan the project with values in mind, discover what values are at play, implement those values in the design of the game, and verify that the values discovered and implemented are expressed in the game. When ideas surface from this iterative model, designers must map player patterns and feedback to each of the game's elements. Although values emerge from the many game elements, these are best verified together in their cumulative effect.

Verification that values are embodied in the software or game might be facilitated through regular meetings with design partners, play-testers, educators, outside peers, and industry advisers. Designers must ensure that the game improves with

the tight integration of values and that the values do not drop out of the game. This is a delicate balancing act among seemingly opposing goals; the task that would be impossible without an iterative testing and feedback structure.

Later in the game development process (sometimes after a project is finished), it is wise to conduct formal assessments. The software engineer's question about functionality ("Did we build the right thing?") translates into "Did we incorporate the values discovered at the onset of the project consistently throughout the game in a meaningful way?" That is the easy part. The software engineer's question about experience ("Did we build it right?") is more difficult to address because it involves turning the game loose into the world, having people play it in vastly differing contexts, and seeing how those values are experienced. Trying to understand whether a game changes a behavior (by persuading someone to quit smoking, for example), shapes an attitude (about America's foreign interventions, for instance), or provokes an emotion (such as empathy for genocide victims) requires sophisticated tools of analysis.

Because iterative software design does not have the vocabulary to address questions of values, the conscientious designer must draw from other disciplines. Any given game can contain perspectives from psychology, literature, media studies, education, human factors, and health. In some of these disciplines, verification may take the form of standardized research protocols, which typically follow the scientific method: a researcher identifies a problem, posits a hypothesis or set of research questions, gathers relevant data, and analyzes and interprets the data.

The way in which a researcher gathers data is important. Different disciplines have different research methods, such as ethnographies, experiments, historiographies, and case studies. In the social sciences, research tends to fall into three general categories—quantitative methods, qualitative methods, and hybrid or blended methods. Quantitative methods try to capture the amount of something. They count, collect measurements, and almost always include statistical analyses. Qualitative methods attempt to encompass the qualities of a phenomenon (the how, what, where, when, and why). Qualitative research gathers meaning, context, descriptions, and settings. Both methods stress objectivity and rigor and can offer valid perspectives.

Research on values typically (but not always) involves qualitative research methods. Whether data gathered is quantitative (numerically driven, such as the number of clicks on a given item on screen) or qualitative (nuanced and difficult to compare, such as interviews about player beliefs), what truly matters is that the research is conducted carefully and analyzed rigorously. This model can be applied to values questions, and it can be used with either quantitative or qualitative approaches. A simplified model of a research program is shown in figure 7.2.

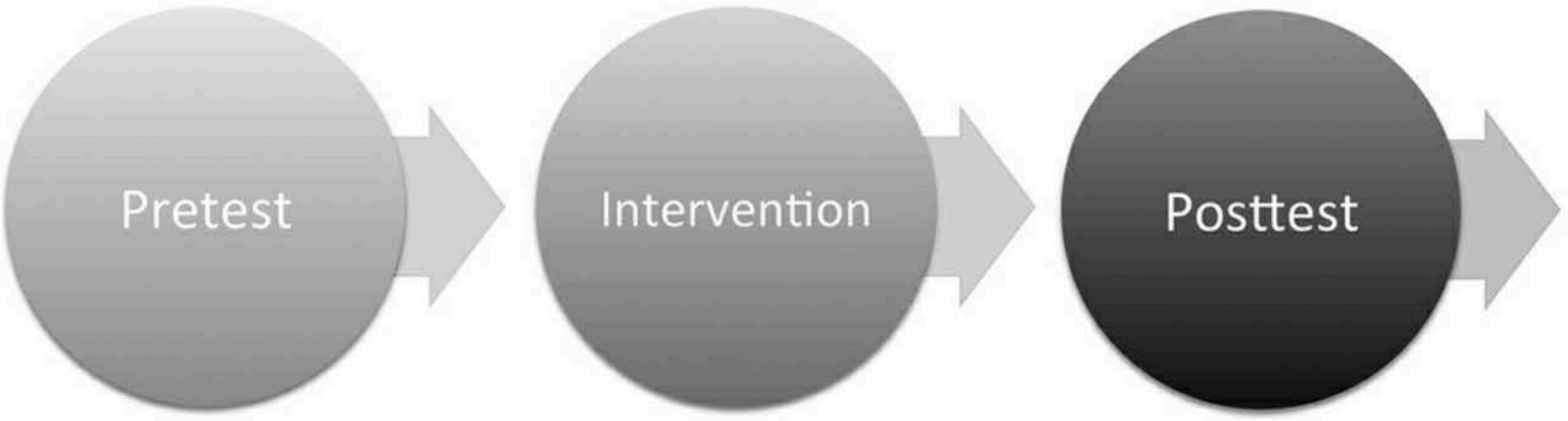

Figure 7.2
A typical pretest and posttest model.

Verification research with players is conducted through the two lenses of quantitative research, which relies on vetted methods and numerical markers of individual preference, and qualitative research, which is more descriptive and exploratory. Another way to think about methods is to think of experimental methods versus descriptive methods. Descriptive methods try to get to the root of the issues by providing participants with an intervention and then observing the result.

Experimental methods establish a set of identifiable conditions to which participants are randomly assigned to test the causal relationship between an intervention and an outcome (figure 7.3). For example, when using an experimental study design approach for a particular iPad game, researchers might study a collecting mechanic across different versions of the game that feature a competitive game goal. A control condition (or neutral/no intervention state) provides a baseline for comparison. Ideally, the verification process can combine both approaches: descriptive studies can tell you what appears to be happening with a particular design, and experiments allow designers to test the apparent effects systematically.

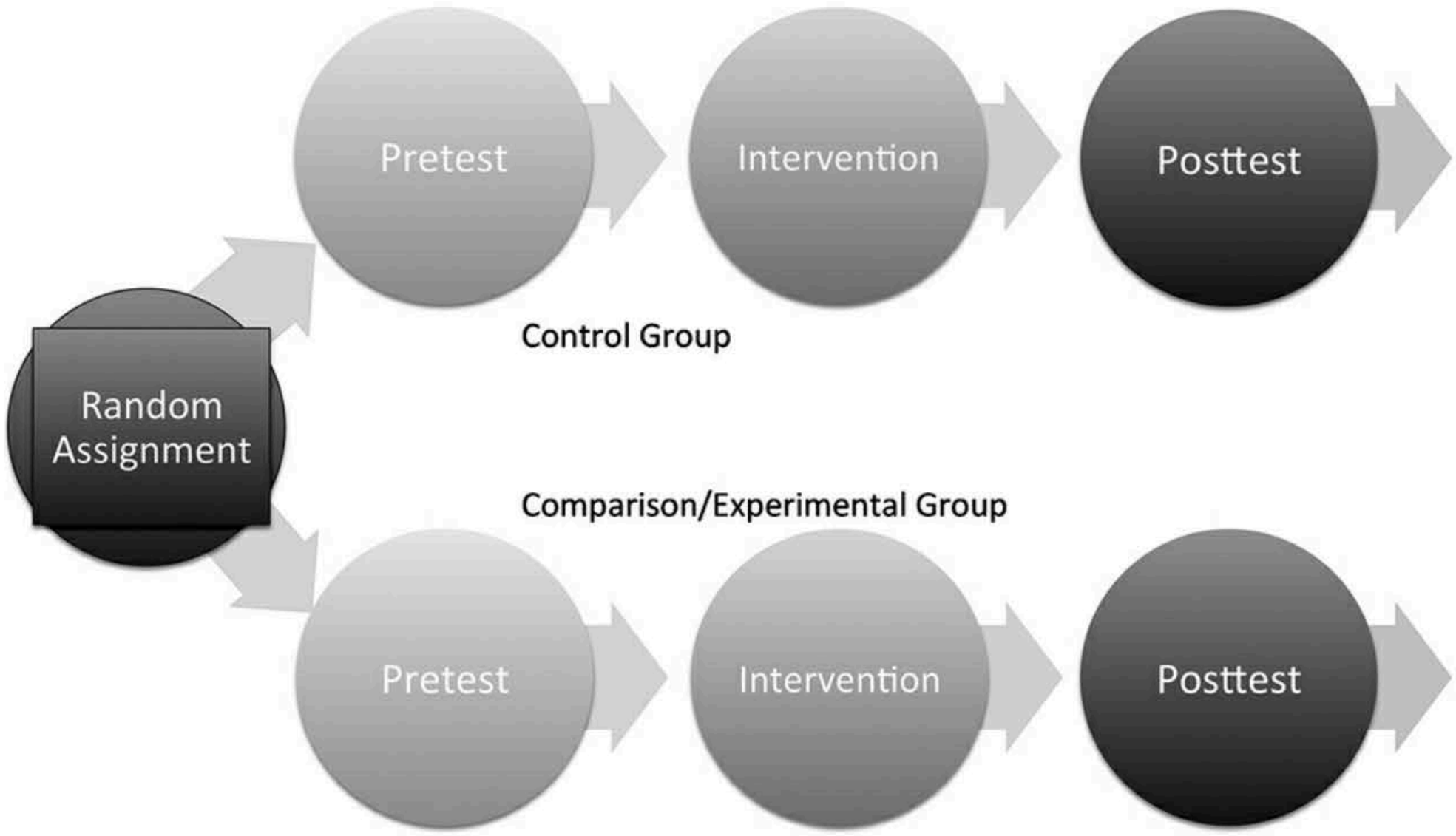

Figure 7.3
An experimental model.

Research on values in games typically investigates how players are affected by the experience of playing a game, so both angles—descriptive and experimental—could prove useful. Before beginning the game, players might be given a pretest that includes survey questions or interviews. After playing the game (the intervention), they are given a posttest. Then the pre- and posttests are compared to determine if the game brought about any changes in the players.[4] Ideally, a follow-up study several weeks later would determine if any effects last.

Using qualitative research methods, designers who seek to verify their design execution might conduct deep descriptive work in the form of interviews, observations, video and audio analysis, and longer-term ethnography. During play, think-aloud protocols can be an effective research technique. Players give a running commentary that describes their in-game decisions and their impressions of the game, which helps researchers understand what players think during the play experience. These could be outcomes in themselves, or they could be mediators between the game and the eventual behavior or attitude change. Assessments after play can gather effects of the entire play experience, many of which are not obvious or predictable. Finally, researchers can collect general data by observing a player and detecting technical data (such as time on task or screens, number of clicks, and where

clicks occur). Careful researchers seek larger numbers: data collected from two hundred players would be a far stronger data set than data collected from eighteen.

Another approach would be to use an experimental design. In an experimental study design, players are randomly assigned to one of several treatments to determine causal relationships between particular elements of a game's design and changes in player attitudes or behaviors. Some randomly assigned players play one version of the game, and others play slightly different versions in an attempt to isolate the effects of nuanced design decisions in the game. This type of verification allows designers to compare different conditions or differing designs. One group of players plays a control version that is a neutral or value-free variant of the games. Then a variant that includes the values is included as the experimental version. In an experimental design, the players experience only one version of the game; they do not see the other versions of the game during verification.

Using an experimental approach helps the design team remain objective and honestly examine what is happening with players. How the players are addressed is important. They cannot be asked leading questions or be swayed toward particular answers.[5] In any verification process, how players are questioned is pivotal. Asking the right questions in verification is the key to understanding whether values are supported or have changed through a game.

Cases

As noted above, verifying the values at play in a given game covers a variety of relevant outcomes, including whether and to what extent the game affects players' behaviors in ways that are systematically relevant to values of interest, enhances players' understanding and appreciation of the values and associated issues, and changes players' attitudes and evokes relevant affective responses. Verifying these outcomes can take many forms. Questionnaires and testing can reveal some sorts of values contents, but they do not provide deep insight into affective states, such as empathy. To gauge behavioral change such as health interventions, large, randomized controlled trials may be necessary to ensure that the results are taken seriously by the medical and psychological communities. Those who study values in games must adapt their methods to suit both the values in question and the nature of the outcomes hypothesized as dependent variables. In this section, we explore case studies of assessment and verification.

Verification 1: Has the Game Promoted the Desired Behaviors?

Can games change behavior? If we claim that the answer is yes, what evidence do

we have to prove it? Behavior change can refer to behaviors in the game as well as outside of it. Within a game, designers might find that particular design choices encourage players in multiplayer environments to collaborate rather than compete or to take risks rather than play it safe. Such in-game behavioral changes are easier to verify than changes beyond the game environment. With games, as with other media, understanding how they affect change in people's behavior is an urgent, ongoing research challenge. As discussed below, health games have been found to change some patient behavior.

Health Games: Values of Exercise, Health, Self-Care, and Autonomy

In a 2007 review article, Tom Baranowski and his colleagues surveyed twenty-eight studies of games that promoted health-related behavior through a variety of techniques such as reminders, tailored messages, goal setting, learning from a game's "life lesson," and so on. Most of the articles found correlations between playing the games and positive behavioral changes.[6] Exercise games showed the most straightforward results. A 2006 study looked at the game *Dance Dance Revolution* (Konami 1998) as played by overweight and nonoverweight children and adolescents and found that it boosted heart rates above the minimum level for cardio fitness.[7] Other studies have had similar results, showing that playing some games involving movement can be counted as exercise for youth.[8] In 1997, Brown, Lieberman, et al. studied the effects of a game for adolescent diabetes. The game, *Packy & Marlon* (WaveQuest/Raya Systems 1995), was an adventure-style Super Nintendo Entertainment System game that was designed to engage diabetic youth in self-care (figure 7.4). Players take the character's blood sugar management and handle food selections for four virtual days. The players played on average a total of thirty-four hours over six months, and the treatment group (game players) experienced a 75 percent drop in emergency and urgent care visits.

Figure 7.4
A scene from *Packy & Marlon* (WaveQuest/Raya Systems 1995).

Unlike most studies of exercise games that focus on in-game factors such as heart rate, a handful of studies have attempted to demonstrate change in player behavior outside of game environments. An example of this is the effort to verify the effectiveness of Hopelab's Re-Mission. Developed in 2006 to 2008, Re-Mission was designed to help adolescents and young adults with cancer (including acute leukemia, lymphoma, and soft-tissue sarcoma) to understand and participate in their own care. Study results, which were published in the medical journal Pediatrics, showed that playing Re-Mission significantly improved key behavioral and psychological factors associated with successful cancer treatment.

[9] The study was conducted using a randomized trial among 375 participants who were thirteen to nineteen years old and undergoing treatment at thirty-four different medical centers in the United States, Canada, and Australia. The researchers examined the categories of adherence, self-efficacy, knowledge, control, stress, and quality of life. Patients on particular drugs were tracked by either pill-monitoring devices or blood and urine tests. In the study, participants who played the game maintained higher levels of chemotherapy in their blood and took their antibiotics more consistently than those in the control group. Participants given *Re-Mission* also showed faster acquisition of cancer-related knowledge. These results indicate that a carefully designed video game can positively affect health behavior in young people with chronic illness. Hopelab's game-integrated portable monitoring device, Zamzee, also shows clinical promise.

Greitemeyer and Osswald (2010) studied the effects of prosocial (socially positive) games on behavior. They used experimental studies and conducted four experiments that examined the hypothesis that playing a prosocial (relative to a neutral) video game increases helping behavior. The team found that exposure to prosocial video games activated prosocial thoughts, which in turn promoted prosocial behavior. These results cast light on the content of video games and demonstrate that content can foster both antisocial and prosocial effects.

Stanford Study: Values of Sustainability and Environmentalism

In a 2011 unpublished study conducted at Stanford, researcher Sun Joo Ahn engaged fifty people as participants in a study about how using nonrecycled paper leads to deforestation.[10] The study's aim was to see if it was possible to change behavior in the physical world. After an initial introduction, half of the participants read a text, which further described what happened to the tree as well as to animals such as birds that depend on the tree. The other twenty-five participants entered a virtual forest and were told to cut down sequoia redwood trees using a game controller that gave haptic feedback so that players could feel the sawing. Before the intervention, regardless of their assigned group, all participants reported a belief that their personal actions could improve the environment and affect sustainability. After the intervention, the researcher staged an accident, spilling water across a table where she had placed a stack of paper napkins. This provided participants with a chance to put their stated beliefs into practice. The subjects grabbed napkins to clean up the spill, and those who had read only about logging used an average of 20 percent more napkins than those who had sawed down trees in the virtual forest. Were the behaviors that the researchers were interested in promoting actually encouraged by playing this game? According to this study, they were. Although this was a small experiment, nearly 90 percent of psychological studies measure imme-

diate impact, as did this small study.

Extrinsic and Intrinsic Rewards in Activist Games

Game makers must be careful about how they structure rewards in a game because the psychology of rewards is complex. In 1973, Lepper, Greene, and Nisbett demonstrated that the experience of play is fragile and can easily turn into its opposite. One way that play can turn into its inverse ("not play" or even work) is to offer rewards. In this study, the researchers observed children engaged in the inherently pleasurable task of drawing. When kids were rewarded for their drawings with prizes such as ribbons or gold stars, they subsequently spent less time playing with drawing materials.[11] Before the reward system, the children were drawing out of a sheer joy: The activity was its own reward. Rewards, however, caused a psychological shift. The children's reasons for drawing became associated with acquiring ribbons and gold stars, and their pleasure in the task declined. The children's intrinsic motivation was replaced by extrinsic motivation, a phenomenon psychologists call the *overjustification effect*. This led to a decrease in the kids' interest in drawing because extrinsic rewards are not nearly as motivating as intrinsic rewards. The research has held up. A 1999 metaanalysis of 128 studies on motivation and rewards found that tangible incentives do reduce intrinsic pleasure in tasks that the participants found inherently compelling.[12] It appears that people feel that their autonomy is compromised by external rewards and that external rewards interfere with the enjoyment of internal rewards from the same activity.

Recent enthusiasm for gamification—the framing of everyday activities within gamelike reward structures—attempts to adopt an approach that is used in programs such as airline miles and the Girl Scout badge system. Gamification has prompted many new companies to hope that behavior change can be transformed into profit. The process will not be simple. Although games are engines for possible behavior change and motivating ultimate intrinsic pleasure, there are also ways to design a game to undermine intrinsic pleasure by externalizing rewards. For designers, the application of a game to a social issue demands a clear alignment between the value and the game design.

One educational game whose success has been proven through rigorous assessment is *Quest Atlantis* (Sasha Barab 2005), a game that consciously integrated values into its design. More than ten thousand children have played the game, and there have been multiple studies of its effects. Student players have demonstrated learning gains in science, language arts, and social studies. More important, teachers and students reported increased levels of engagement and interest in pursuing the curricular issues outside of school. The game helped children find a creative voice to explore global issues, personal feelings, and personal agency. The

game managed to activate both internal and external reward systems.[13]

Other games have been less successful. An activist urban mobile game encouraged players to engage with people on the streets of New York City with the goal of promoting a more political sensibility in players and passersby. The game covered subjects such as union strikes, fires, and riots, and one game task was to discover things about certain sites and document the discoveries through photos, videos, and text messages. One player (called Trixie here) found herself in Tompkins Square Park in the East Village. She encountered a man on a park bench, and they discussed the riot that erupted in the park in 1988 when the police tried to remove homeless people who had been sleeping there. The man said that he still lived in the same apartment overlooking the park that he did in 1988. As the two discussed the riots and the way that neighborhood residents responded to them, Trixie became so interested that she nearly forgot the game was in progress. Given that the game was devoted to reinvigorating conversations about the history and politics of the city, this would not necessarily have been an unfortunate outcome. The extrinsic reward of the points dropped off, the external reward replaced by the intrinsic pleasure of connecting to another person and his story.[14]

During this conversation, members of another team appeared and voided Trixie's points by catching her in the act of gathering points. The man on the park bench had been planted by the other team as a lure that would allow them to catch other teams in the process of interacting with residents. In a typical game, such a well-timed 'gotcha' moment would have been a brilliant move. But in a game that fosters the values of communication, community, respect, and solidarity, it was ill-considered because the game rules encouraged players to undermine the game's purported values. As a player, Trixie's intrinsic motivation was lost through the extrinsic reward framework that did not match the values espoused by the game.[15]

To the designers of the game, the event went on mechanically without a hitch. There was a winning team, and people had fun exploring the city. But as a game that was trying to express and support specific values, it failed. Indiscriminate applications of commonly accepted reward systems, mechanics, narrative premises, and other elements in games may not work to support a particular value. A false mapping phenomenon can occur in which the external rewards may undermine the intrinsic values, pleasure, and motivation for a player. If the designers had included the core values of the project in their iterative process and had verified with playtesters that the rules supported the values in the game, the game could have succeeded in its mission.

Verification 2: Have We Have Enabled Greater Understanding and Appreciation?

Shifts in behavior are among the more obvious effects that a game can have. Less ob-

vious, but still measurable, is a change in a player's understanding and appreciation of certain circumstances and relevant values. In the following cases, games were explicitly designed to promote such understanding.

POX: Save the People—Values of Collaboration, Community, and Health

In 2010, the Mascoma Valley Health Initiative, a New Hampshire public health organization, asked the Tiltfactor game design laboratory to create a game to teach the public about the value of vaccination. The group planned to use the game in classrooms and at health fairs to demonstrate the role that vaccines play in preventing the spread of disease. The goal was to promote a better understanding of herd immunity—an immunity that occurs when a large part of a population is vaccinated against a contagious disease, which helps protect those who might not be able to be vaccinated such as those with immune system disorders. The stakes are high. Because of misunderstandings surrounding vaccinations, many communities in developed countries are losing herd immunity to pernicious illnesses (like whooping cough) that until recently had been nearly banished. The team chose a "collaborative strategy" approach to the design of the game, wherein player cooperation mechanisms would reflect the ways in which members of a community stricken by a health crisis would work together. The team designed the game around the values of collaboration, cooperation, community, and health.

The game, called *POX: Save the People*, was completed in 2011 after a six-month concept-to-completion cycle. The first version was a board game, which later was ported to iPad. The board game is played on a rectangular board of eighty-one spaces (nine rows and nine columns), and each space represents one person in a community where a contagious disease could spread (figure 7.5). At the beginning of the game, two people are immediately infected with a disease. The disease spreads throughout the community with each turn through the direction of randomized game cards, which indicate the direction of the spread for the board. Outbreaks also occur in new areas of the board, just as they might in real life appear in new areas of a city. As the game progresses, players decide to cure those infected or vaccinate to prevent new infections and ultimately halt the disease's progress. Too many deaths in the community cause a player to lose.

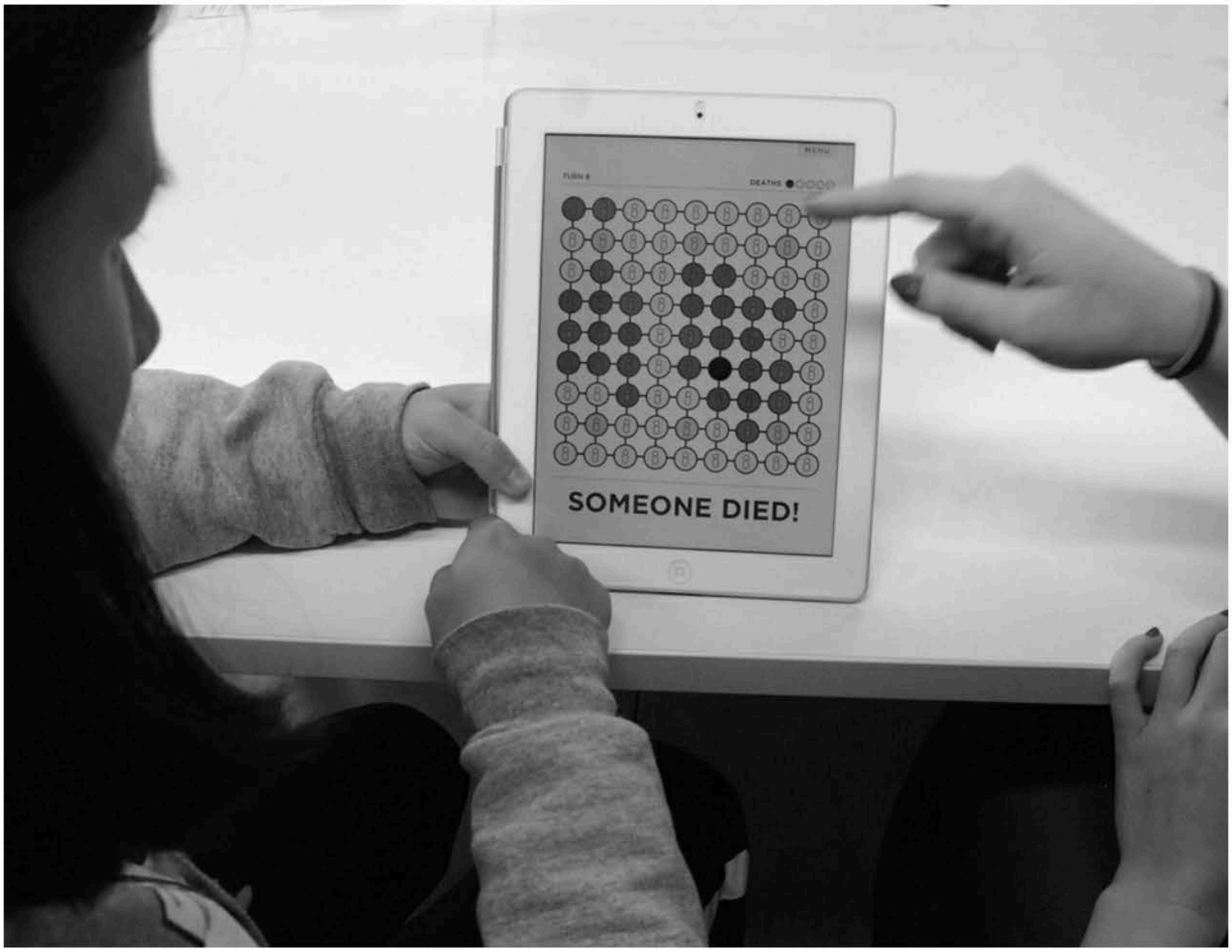

Figure 7.5
A screen showing the results of contagious disease, from *POX: Save the People* (Tiltfactor 2011).

In the pilot study of the game, the design team conducted pre- and posttests for two sessions of gameplay and asked players to write answers to the following question about a different type of health issue:[16]

> You are the director of a large public health organization. The rate of HIV infection among adults in your country is greater than 20%. Because their immune systems are weakened, people with HIV cannot be vaccinated against other deadly diseases, such as tuberculosis. Your job is to reduce the vulnerability of this country's HIV+ population to tuberculosis. How would you address this public health problem?

This question was intended to test whether players could transfer their under-

standing of health issues in *POX: Save the People* to another issue, and the results were surprisingly positive. Most players provided preplay answers that indicated no understanding of herd immunity, but the postplay answers of half of the participants showed that they clearly understood the concept. We also found that players learned about disease prevention and the speed with which disease spreads. Finally, players learned that most public health departments have only limited resources, even though this message was contained only in the mechanic and not in the game instructions. Although we did not set out to measure for belief change because the game is a relatively short intervention, there were instances of change, as documented in this conversation between two players in the pilot study:

Andy: I don't know if you'd consider that one *Law and Order* episode, but somebody was suing somebody else for not vaccinating their child.

Rayanne: Yeah, I watched that.… The child hadn't been vaccinated, but …

Andy: We watched that together.

Rayanne: … but that was fine, but then the child got another child sick and that child died.

Andy: Yeah. I was like, "Not OK." … We had a nice discussion about that …

Rayanne: Whether you should be forced to vaccinate your kids. I think I believe I took a side of "Yes."

Andy: I took a side of "No," but it makes sense to be "Yes."

Although information alone does not change behavior, interacting with the information may indeed change attitudes, beliefs, and behavior. These productive interactions may heighten the importance of playing with values. The *POX* game helped players to understand herd immunity and supported health, community, and cooperation as core values. In addition to the formal verification described above, designers of course are also playtesting their game for gameplay; a designer knows that their games are working if they are testing well. We tested the game hundreds of times at venues such as the Gen Con, a table top gaming convention that attracts nearly fifty thousand gamers annually (figure 7.6).

Learning reading speed 65%


POX
POX

Figure 7.6
Players interacting with the board game *POX: Save the People* (Tiltfactor 2010).

In a follow up study, our team compared playing the original game to two other conditions—*ZOMBIEPOX* (Tiltfactor 2012), which was an identical board game with a different narrative layer, and the iPad direct translation of *POX: Save the People*. Through randomized controlled studies, we measured systems thinking, understanding of disease spread and immunity, and valuation of vaccine. Across all research questions, the most effective game was *ZOMBIEPOX*, and the game with the least effective results was the iPad version of *POX: Save the People*. (All conditions were statistically significantly better than the control state or no game at all.)

Few studies tease out the efficacy of the affordances of digital games as compared to other game forms. In this set of studies, the iPad *POX* game was less effective than the board game *ZOMBIEPOX* for the transference of core learning principles.

Verification 3: Have We Have Elicited a Particular Affective or Attitudinal Response?

Through games, designers have the power to alter a player's perspective of the world and disrupt habitual attitudes and affective responses. The games that are discussed in this section were designed to promote empathy by altering players' perspective on their subjects' plight.

Layoff: The Value of Empathy

Tiltfactor created *Layoff* (2009) to look at values related to the U.S. financial crisis of the time.[17] In this tile-matching puzzle video game, players take on the role of corporate managers who are cutting jobs (figure 7.7). It was intended to stir empathy for laid-off workers, to alter players' comprehension of an important social phenomenon, and perhaps even to incite indignation against the unjust distribution of suffering across social and economic classes.

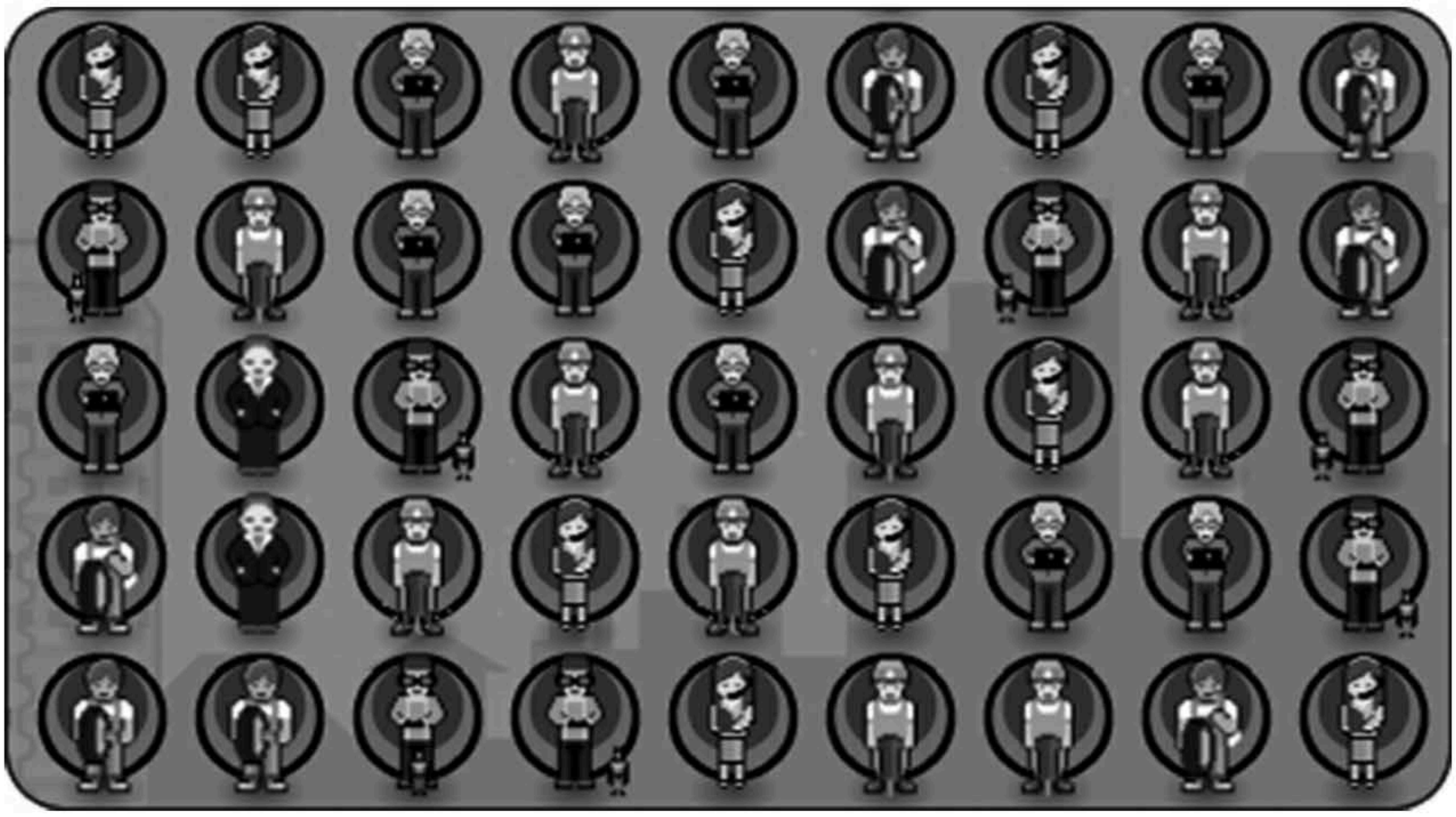

Figure 7.7
Workers from *Layoff* (Tiltfactor 2009).

In the original version of *Layoff*, which featured images of workers as anonymous, nameless characters, players seemed to enjoy laying people off. They exhibited little empathy for the workers or introspection about the financial crisis. Because these results did not achieve the goals set by the team, the designers decided to further humanize the workers, writing short character biographies. By tweaking the elements of character and player choice, the designers successfully implemented their values goals. Players discussed which characters could survive a layoff more easily than others and reflected on their own jobs and personal histories. Players contemplated workplace hiring and firing practices, experienced them as arbitrary and cruel, and considered how these practices deeply affected the fates of individuals.

After the game's release, national news media treated *Layoff* as controversial, and an NBC News reporter interviewed people on the street, asking questions like "What do you think of a game where you play by laying workers off?" This leading question, asked of people who were unfamiliar with the game, elicited the expected negative comments, and many people replied that a game should "not be making fun" of layoffs. The news piece went on to adopt a more nuanced approach and compared the game to the work of Charlie Chaplin, noting that during "hard times" much valuable discussion and solidarity can arise from media experiences.

Players of the game confirmed that it had real emotional impact, and the team utilized the game as a research tool to study empathy in games. How do players feel about layoffs in the game and in their community? Do they cognitively link the two? In our research, we found that players empathetically linked to the workers in the game on both cognitive
and emotional levels. A twenty-eight-year-old male gamer from Michigan said that reading the personal information about workers made him "kind of sad":

> They become real people and it becomes hard to lay them off. Maybe I just feel this way because it hits close to home. This week is my last week at my relatively decent and moderately good paying job before I get put on an "indefinite" layoff. Unemployment rate is 11.6% here so that means I probably won't be getting another job anytime soon.[18]

We conducted formal pilot research on *Layoff* in 2010, and found that that the players did the following:

1. Players read the character biographies and made decisions about who to "fire" with reference to the biographies. This is verification that players understood the point of the game and engaged with its values in the way that we intended.

2. In postplay discussion, they discussed the economic crisis in terms of personal stories of people who suffered in the crisis rather than in terms of abstract economic concepts. This is also verification that they engaged with the game's values (specifically, empathy) in the way that we intended and verification that the game encouraged a particular empathy-focused way of thinking about the crisis.

3. They donated more money from their remuneration to an organization that helps people who are living in poverty. This is verification that the game, when played "empathetically," affected players' behavior.[19]

The evidence indicates that when given controversial topics and intensely charged values such as empathy, conscientious designers can communicate the nuances of values at play in a digital game. The verification process indicated that the value of empathy had been successfully implemented.

Darfur Is Dying: Values of Leadership and Empathy

The connection of *Darfur Is Dying* (Susana Ruiz 2005) to empathy is active in the game's narrative premise, characters, player choices, context of play, and rules for interacting with nonplayable characters and the environment. Researchers investi-

gated the influence of the game on players' willingness to offer humanitarian aid. In two different online experiments, playing *Darfur Is Dying* made a difference. In the first experiment, those who played the game reported a greater willingness to help the Darfurian people than did those who had simply read a text conveying the same information. In the second experiment, some participants watched the game, and others played it. Results indicated that playing the game, rather than observing it as a kind of animation, resulted in greater willingness to help as compared to game watching and text reading.[20]

The news media's reporting on *Darfur Is Dying* led to a Darfur Digital Activist campaign, where players could "Take Action to Stop the Crisis in Darfur" by signing petitions and taking other actions. Students, typically from the United States, were funded to travel to the Sudan to understand the genocide crisis more fully. The game creation team and publisher MTVu promoted the social awareness campaign for several years after the game's release.[21]

Verification for Designers

This chapter describes a few of the ways that designers can verify that values are embodied in games, and what designers mean when they say that values are embodied in a game. As with discovery and implementation components, we draw on game elements (including narrative premise, player choices, environments, actions, and playable characters) as the structure for verification exercises. Various studies and methods are available, based on the specific outcomes that are of interest.

Verification remains more elusive and challenging than the other two core components of the Values at Play heuristic—discovery and implementation. Nevertheless, we have seen success when verification is structured around three questions: "Is the game eliciting the right sorts of feelings?," "What attitude or behavior has changed among players, and do these changes match the game's values?," and "Is the game making players more creative, collaborative, and autonomous?"

When people ask what games can do, we can look to *Re-mission* and other health-related games that have affirmed the values of healthcare and autonomy. The Stanford study, using a staged water spill and paper towels, verified the values of sustainability and environmentalism. *Re:Mission* supported better health among players. From less successful instances, such as the activist game where extrinsic and intrinsic rewards did not match, we also learn what to avoid. *POX* spread the values of collaboration, community, and health. *Layoff* elicited particular affective responses about fairness and empathy.

More rigorous work is needed, particularly studies that test the widely varying

claims for what games do well and how they do it. For example, more experimental studies are needed that focus on the effects of each game element in a given game. We need to understand better how the digital medium contributes to a game's meaning and values and what values are inherent in the games and simulations that are intended to be objective models of natural systems. A first step to taking responsibility for the values in game design is to shed the idea that games can be objective, neutral, or value free and recognize that values may enter from diverse directions and design decisions.

Individual designers may be committed but significant impact will be possible *only* if key game industry actors also adopt a role in developing not only increasingly addictive and financially rewarding games, but also games that foster a rich array of benefits with an eye to improving quality-of-life for players and others. We look to a future in which teams bravely set out values as design aspirations and verify these throughout the design process, prioritizing values as sites for innovation and solidarity. After nearly a decade of investigating values across design processes, our aspiration for the Values at Play heuristic is a pragmatic approach to making new, unique, and engaging games that also enrich the world.