

PRINCIPLES OF GAME DESIGN

120

SOLUTIONS

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Acknowledgments

A ton of thanks need to be heaped into three piles, so in no particular order, I would like to acknowledge that our “inspiration” for this book is another book used the world over by great game designers; it is called *Universal Principles of Design*, by William Lidwell, Kritina Holden, and Jill Butler. So many great game designers I know count this as a valuable part of their professional library.

However, when we started introducing this book to students in the Game Design program at Full Sail University, we discovered that this classic was in some ways too advanced for them. Their inexperience made it too hard for them to make the leap from architecture or art to game design. We initially tried to write a book that bridged the gap between these wider, classic universal principles and the process of game design. But we soon found that we wanted to add a few game-design-specific principles here and there. And then we found that “a few” had turned into 85 or so, and there was no end in sight. So now there are a few principles in this book that are also covered in *Universal Principles of Design*, but not very many. In my opinion, these two books are great companions on the bookshelf of any game designer.

And the next acknowledgment goes to the person who deserves undying thanks and delicious home-made baked goods every holiday for the foreseeable future. Ray Yuen, the illustrator, who I swear has a collection of gnomes under his back porch sketching adorable, funny characters doing wacky things like bringing a gun to a knife fight, did great things for this book in an insanely short amount of time and did an admirable job of adding zombies. Thanks, Ray. I hope you share the cookies with the gnomes.

And third, but not last, is the long list of contributors who went off this cliff with me. Thanks so much, everybody—you know what for. Specifically, I think Keyvan Acosta gets credit for the original idea for this book, Chris Keeling gets credit for being a temporary figurehead, and Ricardo Aguilo gets credit for being with us in spirit but having finally learned how to say “no” when asked to volunteer for something. I’d better stop now before I get any more teary-eyed about all the great contributors (and the amazingly wonderful editor at New Riders, Karyn Johnson, who tells me I have no more room on the page). So I’ll just say I love every one of you, and your baked goods are in the oven right now.

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Introduction

This book is a toolbox of possibilities. It is not a how-to manual. It contains at least four principles (I'm not telling which ones) that insist or imply there is only one true way to begin designing a game, and if it is started in any other way disaster will ensue. They cannot all be right ... can they?

Well, I'm sure I don't know, and I'm not going to try to convince you one way or the other either. What I do know is that these ways/principles/philosophies are all coexisting in the current game industry. Different companies, rock-star designers, and schools of thought all use them and swear by them. Maybe there's a Master's thesis in there somewhere, but I'm not interested in digging it out and ranking the schools of thought according to some value of success.

I'm a collector, not a competitor. I go through life picking up ideas and adding them to my mental list of "Hey, that's interesting, I might use it someday." And when I stumbled into game design as a profession, I discovered every game designer does this same thing. They have a mental toolbox they have collected over the years, which they bring to bear on whatever problem faces them.

And this is one of the reasons it is so hard to teach game design. The tools of the trade are vast and strange. This book is a download of my own mental toolbox with additions from the collections of my professional colleagues. I find it liberating and exciting to have it out in front of me instead of floating around in a jumble in my grey matter. It's even organized into the four times I find myself reaching for these tools: when I'm trying to innovate, when I'm hacking out the "cruft" in the middle of game creation, when the nearly finished work has to be balanced, and ultimately whenever I have to troubleshoot a specific problem.

How This Book Is Organized

Did I just make a book that needs its own instruction manual? I think I did. I'm not sure if this is a good thing or not! It's certainly very meta. The fact is, this isn't like any other game design book out there, so maybe you do need a bit of help text up front to get you oriented (see [Advance Organizers](#)).

This book is riddled with phrases highlighted in orange type (like the one in the previous sentence) that reference other principles of game design. If they look a bit like web links, it's because that's what I wish they were. I wish you could poke them with your finger and have the pages turn to show you that there's a whole section right over there expanding on this idea. Maybe the digital version will work that way one day.

At any rate, they're kind of like footnotes, but I'm not a footnote kind of person. I'm a digital kind of person, so when some part of this book skims over, or touches on, or mentions in passing an idea that is explored in more depth somewhere else in this book, you'll find the principle cross-referenced in orange. Blue type is used to highlight the name of the designer who created or popularized the principle.

So let's look at the parts of this book. As mentioned earlier, these core principles of game design are organized by four themes: innovation, creation, balancing, and troubleshooting. Each page describes a different fundamental principle that may or may not come up in the process of designing games. If you open this book randomly in the middle, you'll see this: On one side is a text explanation of a principle, and on the facing page is an image that helps illuminate or illustrate the ideas. Go ahead and try it. I'll wait.

No, really. I'm not going anywhere. Take a look; then come back here when you're ready.

. . .

Welcome back! I hope you were intrigued by what you found. You now see how the book is set up, and you've also now used it in one of its intended ways.

How to Use This Book

Don't get too hung up on why a principle is categorized into one section rather than another, though (see [Hick's Law](#)). They can all be used at any point in game development. The categories are just there to help bring order to the chaos and to guide you in the right direction when you're feeling a little lost.

Here are just a few ways you can use this book:

- **Looking for random inspiration.** Different people learn better in different ways (see [Gardner's Multiple Intelligences](#)). Opening this book to a random page is a great way to kickstart a stalled brainstorming session.
- **Brushing up on the fiddly bits.** Some of these principles are convoluted, crazy ideas with lots of parts. Use this book as a reference when you just can't remember what the Fourth Key to Fun is, for instance.
- **Learning something new.** This book is the collective unconscious of many people. Even the contributors themselves were eager to read up on the sections they felt they weren't qualified to write. There's a lot of great information in here.
- **Running diagnostics.** When something in a game is just not working out, this book can suggest avenues to explore. Links between principles can help get you to the root of a problem.
- **Solving problems.** There's an entire appendix with a list of many ways to approach solving a problem. It's not a how-to manual for any particular problem, but it does suggest ways to get started.

Keep in mind that there is no way to completely cover any of these complex ideas in one two-page spread. Contributors to this book complained about how few words I allowed them to work with, and some of them blew past the restrictions altogether (see [Griefing](#) and [House Rules](#)—not as examples, but as explanations), and I had to cut out a lot of great stuff.

So think of each page of this book as an introduction to or quick summary of the topic it covers. There should be enough information, jargon, and name-dropping in each one that rudimentary Google-fu will get you falling down a deep, deep rabbit hole on any of these principles. In fact entire specific books are sometimes recommended in the text. At any rate, don't think of yourself as an expert on a topic once you've read the one-page description here.

And don't even begin to think that these are the only principles or even the most important ones. There are many we couldn't fit into this book, which are being catalogued at www.gamedesignprinciples.com, so come join the discussion there, and tell us which of your favorite principles we left out!

1

UNIVERSAL
PRINCIPLES FOR

GAME INNOVATION

A/Symmetric Play and Synchronicity

Symmetric gameplay occurs when players experience the exact same thing at the same time when they are playing a game together. Chess, an analog game, is one such game (with the exception of Chess by mail, where one player knows the move well in advance of the other). Pong is the quintessential symmetric gameplay example in the video game world. Both players experience each move in tandem, perfectly synchronized; each sees exactly what the other sees on their screen.

Many console game that are multiplayer show players the same thing at the same time. In Mario Kart, players see the same “overhead map” of all the players’ progress while each “window” shows each player a close-up of their particular vehicle so that they can manipulate their own vehicle accurately. In this case, the play is both symmetrical, because of the overhead map, and asymmetrical, because the players are not watching identical actions simultaneously.

Asymmetric gameplay occurs when two or more players see different things simultaneously, even though they are playing together. The prototypical example of this is when one player is the Dungeon (or Game) Master (DM) in a Dungeons and Dragons game. Whereas the DM sees what is going on in its entirety, certain knowledge is kept from the other players. In a video game, players may have different skills that enable them to see things (like traps) that other players cannot. These are cases of intentional asymmetry.

Finally, players may see different things due to lag. This unintentional asymmetry may cause a player to think they have made a shot that they have not; in fact, they may get shot by an opponent they cannot see because the server hasn’t yet caught up to the real-time player.

This brings us to *synchronicity*. Synchronous gameplay is gameplay in which the players make their moves at the same time. This is common in online games where multiple players are in a play space simultaneously. Players usually see some approximation of the same thing at the same time during synchronous play. Multiplayer console games also feature synchronous play. Again, Mario Kart is perfectly synchronous.

The latest craze in asynchronous play is Words with Friends. In asynchronous play, one player makes a move and then waits for the computer/Internet to mediate the move and for the other player to play their move. This can take moments, if both players are connected, or days, depending on when the second player logs in to make a move.



Aces High; Jokers Wild

Aces high; Jokers wild represents an organizational schema in games in which sets of game objects can be reorganized in terms of their presented value or rank. In the case of playing cards, Aces have been (since the French Revolution) classically understood to be the highest ranking card, even higher than the King, Queen, or Jack (which possess a socially symbolical high rank); they are also considered higher than the other numbers, even though they are often used to represent the lowest card (the number one). Similarly, in a Spanish deck, the King beats the Knight, who in turn beats the Page.

However, at the outset of any game using these cards, players establish which of these pieces (cards) is considered the “high” card, and thus they can reorder the deck and change the distribution of probabilities for particular outcomes without changing the foundational rules of the game or even requiring players to draw a new hand. Calling Aces high modifies the distribution of cards available at any one moment without requiring a reset of the game pieces.

Any game in which the set of elements a player has at their disposal, especially those games in which the known values of game objects can be organized in any way, can contain a quick call to Aces high or Kings high. Some games use this principle by changing the high card halfway through the round, or requiring players to call a new high token based on individual or group goals. This introduces an element of variation or surprise into games where the experience might otherwise suffer from too much repetition.

Adding to the complexity of reordering a specifically organized schema on the fly is the introduction of the Joker as a wild card or token. *Wild* cards represent any other card or token in play, rather than having their own value. The wild card is essentially an empty variable that the player can set as needed. Since a game object (card, token, etc.) that can change its value is often used to the advantage of its player and the player’s personal playing goals, the Joker, or any other card labeled as wild, can even become the highest possible ranking token; it can even become higher than an Ace, even if Aces are high, adding more complexity to the straightforward game mechanic of one token outranking another in an ordered set.

Some games label multiple objects (or cards) as wild, allowing for a *handicap* on the original distribution in any given set of game objects. These wild objects alter and increase the possibility of coming across rare game moments since they can occur more frequently than the original distribution of game objects allowed for probabilistically.

For example, in Poker, calling Deuces wild turns four cards of low and almost wasteful value (the Twos) into the potential for a higher ranking hand; in this scenario, imagine a Two being used with the other face cards of a Royal Flush family, or even turning a Two and a Seven (statistically the worst opening hand) into at least a pair of Sevens. Calling diamonds, or red cards, or face cards wild creates different statistics on the plays available in any game, while all other rules can remain unchanged.



Bartle's Player Types

Richard Bartle was a pioneer of multiplayer gaming—the co-creator of the first virtual world. Called MUD (for multi-user dungeon), the game allowed multiple players to simultaneously explore a virtual world and interact not only with the game, but with each other. By creating MUD, Bartle and his compatriots split the atom in terms of teaching designers new things about player behavior. In a 1996 paper called “Hearts, Clubs, Diamonds, Spades: Players Who Suit MUDs,” he attempted to classify the wide variety of player behaviors he saw into four types. Whereas many studies since have helped refine the topology of player types, Bartle's classifications remain popular for their simplicity and reach.

Achievers' (or Diamonds') main focus is “winning” the game. This could be the intrinsic goals of the game or self-defined goals such as “I want to hit Level 80,” “I want to be on top of the leader board,” “I want one million gold coins,” or “I want to beat this game in three hours with just the combat knife.”

Explorers (or Spades) like to figure out the system and experience all it has to offer. Game designers often glom onto the Spade role. Collectors are another type of explorer. Pokemon is a game that itches the itch of explorers to explore the world not only topologically (by running around a map), but also mechanically (by making the battle mechanics nuanced and transparent enough to be interesting to learn). Players that fill out spreadsheets of all the possible items in a game are certainly a type of explorer.

Socializers (or Hearts) play multiplayer games because of the interaction with other players. Beyond just the social nature of playing together, they like to leverage things like guilds and teams to further codify their social existence.

Killers (or Clubs) want to impose their will on their fellow players. This can take on two forms: Some killers kill because doing so shows their prowess in the game. However, some players, called griefers, impose their will strictly because they want to disrupt other players.

Bartle classified these player types on two axes: Acting On versus Interacting With and World versus Players. Achievers prefer to act on the world. Explorers want to interact with the world. Socializers want to interact with players. Killers want to act on players.

By changing the number of opportunities for play in each of these four areas, game designers can affect the types of players who become interested in their game. In analyzing a game, try and determine which of the four player types are being best served. Is there something for all four to enjoy? Is something missing? Is there something for Socializers to do? Killers? By segregating players into logical groups, designers can better provide something for everyone.