

Doing Things with Games

Social Impact Through Play

Doing Things with Games

Social Impact Through Play

Lindsay Grace

Knight Chair of Interactive Media, University of Miami,
School of Communication



CRC Press

Taylor & Francis Group

Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business

CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

© 2020 by Taylor & Francis Group, LLC
CRC Press is an imprint of Taylor & Francis Group, an Informa business

No claim to original U.S. Government works

Printed on acid-free paper

International Standard Book Number-13: 978-1-138-36727-2 (Hardback)
International Standard Book Number-13: 978-1-138-36726-5 (Paperback)

This book contains information obtained from authentic and highly regarded sources. Reasonable efforts have been made to publish reliable data and information, but the author and publisher cannot assume responsibility for the validity of all materials or the consequences of their use. The authors and publishers have attempted to trace the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission to publish in this form has not been obtained. If any copyright material has not been acknowledged please write and let us know so we may rectify in any future reprint.

Except as permitted under U.S. Copyright Law, no part of this book may be reprinted, reproduced, transmitted, or utilized in any form by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying, microfilming, and recording, or in any information storage or retrieval system, without written permission from the publishers.

For permission to photocopy or use material electronically from this work, please access www.copyright.com (<http://www.copyright.com/>) or contact the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400. CCC is a not-for-profit organization that provides licenses and registration for a variety of users. For organizations that have been granted a photocopy license by the CCC, a separate system of payment has been arranged.

Trademark Notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

Library of Congress Cataloging-in-Publication Data

Names: Grace, Lindsay D., author.
Title: Doing things with games : social impact through play / Lindsay D. Grace.
Description: First edition. | Boca Raton, FL : CRC Press/Taylor & Francis Group, 2019. | Includes bibliographical references and index.
Identifiers: LCCN 2019010670 | ISBN 9781138367265 (pbk. : acid-free paper) | ISBN 9781138367272 (hardback : acid-free paper)
Subjects: LCSH: Games--Social aspects.
Classification: LCC GV1201.38 .G72 2019 | DDC 306.4/87--dc23
LC record available at <https://lccn.loc.gov/2019010670>

Visit the Taylor & Francis Web site at
<http://www.taylorandfrancis.com>

and the CRC Press Web site at
<http://www.crcpress.com>

Contents

Acknowledgment, xi

Author, xiii

SECTION I **Understanding**

CHAPTER 1 ■ An Introduction	3
1.1 WHY USE SOCIAL IMPACT PLAY?	3
1.2 INTERACTIVES, TOYS, AND GAMES	5
1.3 WHAT'S NEXT	8
1.4 BOOK OVERVIEW	8
REFERENCES	10
CHAPTER 2 ■ An Overview of Designing for Social Impact	11
2.1 WHAT IS PLAY?	14
2.2 WHAT IS A GAME? GOAL, OBSTRUCTION, AND MEANS	15
2.2.1 Competition	18
2.2.2 Implements	18
2.2.3 Territory	19
2.2.4 Inventory	19
2.2.5 Rules	19
2.3 UNDERSTANDING GAMES, RHETORIC, AND MECHANICS	20
2.4 GAMES AND RHETORIC	22
2.5 CONCEPT STATEMENTS AND GAME DESIGN DOCUMENTS	24

2.6	GAME DESIGN DOCUMENTING	26
2.7	PRACTICE WHAT YOU'VE LEARNED	29
	REFERENCES	29
CHAPTER 3 ■ Engagement Design and Serious Play		31
<hr/>		
3.1	SERIOUS PLAY IS NOT ORDINARY LIFE	35
3.2	MAKING SERIOUS ISSUES PLAYFUL	36
3.3	DESIGNING WITH PURPOSE-DRIVEN GAME VERBS	39
3.4	GAMES DESIGN AS THE PROBLEM AND SOLUTION	41
3.5	GAME DESIGN MODELS	44
3.5.1	Playcentric Design	44
3.5.2	MDA: Mechanics, Dynamics, Aesthetics	45
3.5.3	Affirmative Design	45
3.5.4	Critical Design	46
3.6	STORYTELLING	47
3.7	WHAT ABOUT FUN?	50
3.8	THE RHETORICS	52
3.8.1	Progress	53
3.8.2	Fate	54
3.8.3	Power	55
3.8.4	Identity	56
3.8.5	Imaginary	57
3.8.6	Self	59
3.8.7	Frivolous	59
3.9	PRACTICE WHAT YOU'VE LEARNED	62
	REFERENCES	62
CHAPTER 4 ■ Educational Games		65
<hr/>		
4.1	FEEDBACK SYSTEMS AND ASSESSMENT	67
4.2	GAMES AS EDUCATIONAL SYSTEMS	68
4.3	GAMES AS TEACHERS	69
4.4	VIEWING PLAYERS AS STUDENTS	72
4.5	FEEDBACK SYSTEMS AS DESIGN MODEL	73

4.6	KNOWING INPUT AND OUTPUT	74
4.7	INFORMATION GAMES	74
4.8	ASSESSMENT GAMES	75
4.9	MIXING INFORMATION AND ASSESSMENT GAMES	75
4.10	INFO GAMES: INFORMATION THROUGH PLAY	78
4.11	FIRST STEPS IN DESIGNING WITH EDUCATIONAL GOALS	79
4.12	PRACTICE WHAT YOU'VE LEARNED	81
	REFERENCES	82
SECTION II Application		
CHAPTER 5 ■ Changing the Body and Mind		85
<hr/>		
5.1	DEMOGRAPHICS, TECHNOGRAPHICS, AND PSYCHOGRAPHICS	86
5.2	TECHNOGRAPHICS	88
5.3	PSYCHOGRAPHICS	90
5.4	GAMES TO AFFECT BEHAVIOR	92
5.5	PERSUASIVE PLAY	93
5.6	EXERGAMES: PHYSICAL HEALTH THROUGH GAME PLAYING	95
5.7	GAMES TO AFFECT MENTAL HEALTH	96
5.8	NEUROSCIENCE, MEDITATION, AND HABIT	97
5.9	THE NEGATIVE EFFECTS OF MENTAL HEALTH AND GAMES	98
5.10	PRACTICE WHAT YOU'VE LEARNED	99
	REFERENCES	99
CHAPTER 6 ■ Defining Newsgames and Its Complements		101
<hr/>		
6.1	DESIGNING NEWSGAMES	104
6.2	THE MODEL-DRIVEN TOY	104
6.3	THE PLAYABLE SIMULATION	107
6.4	PLAY BY ANALOGY AND ABSTRACTION	109
6.5	THE GRAND FEATURE: AAA GAMES ABOUT NEWS	112

6.6	WHERE TO BEGIN AND WHAT TO DO	113
6.7	INDEPENDENT GAMES AND NEWS	117
6.8	THE CHALLENGE OF LUDO-LITERACY	118
6.9	PRACTICE WHAT YOU'VE LEARNED	120
	REFERENCES	121
<hr/> CHAPTER 7 ■ Persuasive Play		123
7.1	ANALOG GAMES HISTORY	124
7.2	DIGITAL PERSUASIVE PLAY	127
7.3	WHY GAMES?	129
7.4	ADAPTING THE LIMITATIONS OF GAME DESIGNS	131
7.5	SIMULATION	136
7.6	CRITICAL PLAY AND CRITICAL DESIGN	138
7.7	PROCEDURAL RHETORIC	139
7.8	ASSESSING IMPACT	141
7.9	PRACTICE WHAT YOU'VE LEARNED	143
	REFERENCES	143
<hr/> CHAPTER 8 ■ Empathy Games		145
8.1	SCALING EMOTION	147
8.2	SHIFTING PERSPECTIVE	148
8.3	TELLING STORIES	150
8.4	COOPERATING EMPATHY	152
8.5	THE PROBLEMS WITH EMPATHY DESIGN	153
8.6	CONTINUITY, ABUSE, AND PLAYER TRUST	156
8.7	VIRTUAL REALITY AS AN EMPATHY MACHINE	157
8.8	PRACTICE WHAT YOU'VE LEARNED	158
	REFERENCES	159
<hr/> CHAPTER 9 ■ Designing for Communities of Play		161
9.1	BIG GAMES	162
9.2	LOCATION-BASED PLAY	166
9.3	ALTERNATE REALITY GAMES	167

9.4	AUGMENTED REALITY	170
9.5	INTERSTITIAL GAMES	171
9.6	CROWD GAMES	174
9.7	DESIGNING FOR COMMUNITIES OF PLAY	174
9.8	PRACTICE WHAT YOU'VE LEARNED	177
	REFERENCES	177
CHAPTER 10 ■ Human Computation, Community Action, and Other Social Impacts		179
<hr/>		
10.1	HUMAN COMPUTATION GAMES	179
10.2	DESIGNING HUMAN COMPUTATION GAMES	183
10.3	SOCIAL IMPACT PLAY ART	188
10.4	CONCLUSION	196
	REFERENCES	196
SECTION III Implementation		
CHAPTER 11 ■ Prototyping, Ethics, and Testing		201
<hr/>		
11.1	PROTOTYPES: HOW AND WHEN TO TEST YOUR IDEAS	202
11.2	METHODS FOR PROTOTYPING	206
11.3	ETHICS: WHERE (NOT TO GO)	208
11.4	TESTING	210
11.5	PLAYTESTING	210
11.6	USER TESTING	213
11.7	EFFECT AND AFFECT ANALYSIS	213
11.8	DESIGNING FOR EFFECT AND AFFECT ANALYSIS	215
11.9	PRACTICE WHAT YOU'VE LEARNED	216
	REFERENCES	217
CHAPTER 12 ■ Thinking about Implementation		219
<hr/>		
12.1	ANALOG OR DIGITAL?	220
12.2	ANALOG VS DIGITAL	220
12.2.1	Distribution	221

12.3 COMPUTATION NECESSITY	223
12.4 DURABILITY	223
12.5 MAINTENANCE	225
12.6 COST AND AUDIENCE	226
12.7 HYBRID: ANALOG AND DIGITAL	228
12.7.1 Implementation	228
12.7.2 Analog Game Considerations	228
12.8 DIGITAL IMPLEMENTATION	229
12.8.1 Play Perspective	230
12.8.2 Play Hardware and Software	230
12.8.3 Design Requirements	230
12.8.4 Distribution	230
12.8.5 Complexity	231
12.9 PRACTICE WHAT YOU'VE LEARNED	231
CHAPTER 13 ■ Implementation Tools	233
13.1 GAME UI, UX, AND WIREFRAMING	234
13.2 ART TOOLS	236
13.3 3D MODELING AND ANIMATION	238
13.4 AUDIO TOOLS	240
13.5 PROTOTYPING TOOLS	241
13.6 PRODUCTION DEVELOPMENT TOOLS	243
13.7 ANALOG GAME IMPLEMENTATION	244

Acknowledgment

There are far too many people to thank than space on this page. Instead, I want to thank every student who took the time to ask the hard questions, every fellow faculty member who saw the potential in such work, and the generation of games researchers that have continued to move game design research forward.

A very special thank you to the people who gave me my first chance. Mitch Hennes, for giving me that first games teaching gig at the Illinois Institute of Art. Peg Faimon and Glenn Platt who created a space at Miami University to foster such research. The American University faculty and staff, who supported the founding of one of the few social impact focused game design curricula and academic game studios in the world. Most recently to the faculty and staff at the University of Miami School of Communication, who continue to create a supportive, collegial environment that fosters such work.

I must acknowledge both Dean Jeffrey Rutenbeck for his unwavering support and vision and Dean Gregory Shephard for his knack for leadership and seeing the long-term potential in such work. This work could not have been completed without the support of the James S. and John L. Knight Foundation and the financial support of C. Michael Armstrong.

A general thanks to the many organizations, clients and collaborators who supported this research as practice in the real world, especially Deloitte, the Smithsonian American Art Museum, ETS and Games for Change. Education Testing Service's Tanner Jackson was instrumental in converting game ideas into empirical research. Peter Jamieson at Miami University has remained a generous and brilliant collaborator for nearly a decade. And to Roger, Mia, and Andy for being great researchers and wonderful friends.

And as always, to my mom, whose perseverance taught me how to keep going in the face of adversity, and my father whose propensities for writing inspired me to finish this project.

Author

Lindsay Grace is the Knight Chair of Interactive Media and an associate professor at the University of Miami School of Communication. He is Vice President for the Higher Education Video Game Alliance.

His work has received awards and recognition from the Games for Change Festival, the Digital Diversity Network, the Association of Computing Machinery's digital arts community, Black Enterprise, and others. He has authored or co-authored more than 50 papers, articles, and book chapters on games since 2009. His creative work has been selected for showcase internationally including in New York, Paris, Sao Paulo, Singapore, Chicago, Vancouver, Istanbul, and others. Lindsay has curated or co-curated Blank Arcade, the Smithsonian American Art Museum's SAAM Arcade, the Games for Change Civic and Social Impact and others.

He has given talks at the Game Developers Conference, SXSW, Games for Change Festival, the Online News Association, the Society for News Design, and many other industry events.

Between 2013 and 2018 he was the founding director of the American University Game Lab and Studio. He served as Vice President and on the board of directors for the Global Game Jam™ non-profit between 2014 and 2019. From 2009 to 2013 he was the Armstrong Professor at Miami University's School of Art. Lindsay also served on the board for the Digital Games Research Association (DiGRA) between 2013 and 2015.

I

Understanding

An Introduction

THERE ARE MANY DIFFERENT ways to describe social impact games and play. This chapter introduces you to those uses and briefly explains the concepts needed to understand the power of play, the ways in which play is understood, and how designers can employ the design of play for toys, interactives, and games. This chapter serves as a basic orientation.

1.1 WHY USE SOCIAL IMPACT PLAY?

If you've started reading this book, there's a good chance you have an idea or interest in employing play for some purpose. This may be social impact, training, health, empathy, or some other aim. If you need the simplest answer as to why—the answer is engagement. After more than a decade researching impact, play, and audiences, there's a very simple way of explaining the value of games and social impact. Readers read, viewers watch, and players do.

Play is active. Playing a game requires full attention during play. It is not a passive medium. Unlike television, for example, players do not typically leave a game playing itself while they prepare breakfast. They do not fall asleep to a game as white noise. Play demands our attention. Play demands action. How appropriate then, that those looking to demand the attention of an audience employ play through games.

As for reading, it remains one of the most common ways to disseminate information. The irony of writing a book about games, yet championing the value of play, is not lost here. The challenge in a global society is that reading requires literacy. If something is written in a language you don't understand, it requires translation. This is the literacy challenge of

the written word. If that something is data-driven or mathematical, it may likewise require a kind of data or numerical literacy. Statistics, for example, are often as widely misunderstood as they are quoted, shared, or littered in conversation. If literacy focuses on a specific domain, it may require additional reading. For some, reading is engaging, for others, it is inaccessible because they don't know the language.

Play, however, can be more universal. Psychologists identify play as essential to development. Play is common to many animals, including the human animal. Play is not limited by language and often does not require it. Play is also part of learning. It is something that pervades cultures globally. Play is practiced by all humans, to varying extents.

Play requires a kind of ludo-literacy or understanding of how to play. The benefit of ludo-literacy is that can require very little instruction. It can serve as a more universal language than the most well-spoken languages in the world. American television personality and minister, Fred Rogers of the famed *Mister Rogers' Neighborhood* show frames it thus, "Play is often talked about as if it were a relief from serious learning. But for children play is serious learning. Play is really the work of childhood" (Moore, 2014).

If play is the work of childhood, then ludo-literacy is perhaps one of humanity's native languages. Play is a way of understanding and a way of explaining. Play and relationship games function as a way for players to understand and designers to explain. We play with ideas to understand and explore them, we play with objects to know their properties, and we role play to examine the complexities of human interaction. There are so many ways we play on a daily basis, that we forget play is present. It might be the joke we shared, the meme we reposted, the crumpled paper we offer as a layup to the trash bin, or the hours we play swiping on mobile phones or saving the world on our home console.

This book aims not to champion games and play as the only way to communicate or initiate social impact. Instead, it champions the opportunities to include play in social impact efforts. It champions the idea that designers can do things with games. The aim is to improve the world, to make something a little more accessible, a little more meaningful, or a little more beautiful.

Until relatively recently in human history, play was discarded as a childish thing that must be left behind when entering adulthood. This is a myopic view of play. It fails to recognize the powers of play demonstrated through research in psychology (Brown, 2009), anthropology (Huizingha, 2014), and art (Melissinos and O'Rourke, 2012). Play is not the activity that

bookends the frivolity of childhood and the leisure of retirement. It is not merely building blocks, throw-catch volleyball, bocce, or shuffleboard. It is the way we find flow, alleviate stress, explore new concepts, and understand the world around us.

As Brian Sutton Smith, author of more than ten academic books on play put it—“the opposite of play isn’t work, it’s depression” (2009). This oft-cited reference reminds us of one important thing—work is necessary, but play is too. If you want to create impact, creating impact through play should be in your toolset. Just as we play with an idea or concept, impact can come from employing play. The serious work of social impact is not in opposition to play, it is a tool to its success.

1.2 INTERACTIVES, TOYS, AND GAMES

It is often useful to understand the difference between interactives, toys, and games. When people first consider a digital solution, it’s important to consider how play will be employed toward your goal. As discussed, play is really about offering an engaging way to examine and explore a problem.

An interactive is any designed experience through which a user acts and receives feedback. While much discussion has been had about what it means to be interactive, it’s often easiest to start with a simple definition and a set of examples. For our purposes, to be interactive, a designed experience need simply allow someone to act and provide feedback on that action. So, any experience from improvisational comedy shows to desktop calculators could be considered an interactive.

In the past 30 years, interactive experiences have become so commonplace that we sometimes forget that they are interactive. We also forget that in the history of art, for example, it was appropriate to feel and touch the paintings that now hang behind security glass. The same is true of theater. The notion of a non-interactive audience in theater is a relatively new concept for humanity, credited by some as a product of the Industrial Revolution and as a way of asserting power. Even the structures of education, a movement from the interactions of life lessons to the classroom space, have been critiqued as a movement away from interactivity and toward the convenience of large-scale, one-way delivery (Connors, 1983)

Interaction is so common to the human experience that we nearly take it for granted. Conversations and dialogue, for example, are interactive, but we don’t always remember them as such. The most common pattern for an interaction is action and reaction. This is also a useful way to frame

any design task, by designing both the user or player action and the subsequent reaction.

It's important to recognize the pattern of interaction, action, and reaction, as it serves as the foundation for any standard mode of play. Imagine for a minute how a child learns through play. At first, it is merely about making something happen. Discovering that something pushed moves, and, depending on the properties of that thing, moves in distinct ways. Each interaction with a ball becomes more interesting as the actions and reactions of the ball differ. A light ball requires little action for a big reaction, a big ball the opposite. Children learn these properties not by being told how they work, but instead through action.

That early play with a ball turns to more complex play as the skills are mastered. Pushing a ball becomes passing a ball or catching a ball. It might also become rolling a ball into other objects or discovering what happens when the ball is dropped in the toilet or hits another person in the face. These are all patterns of play. They are also patterns of learning. From the start, humans are wired to learn through play.

As you can likely see, the pattern of playing with a ball changes. The play evolves into some sort of game. Throwing and catching can become a game, where catches are counted, or the winner is the first person not to drop the ball. The game might also involve other forms of play, such as building blocks which once constructed are demolished with a single throw.

This is similar to the evolution of games. The first digital games were a triumph simply in the fact that they worked. The ability to play with or through a computer is a clear triumph in the evolution of human-computer interaction. Prior to games like *Pong* or *Spacewar!* (Kent, 2010), people were users of computers, not players. They could interact with the computer, but they were fairly limited in their play.

Computer-mediated play changed the ways in which we could play. Adding a computer to play opened up a variety of new interactions that were computational and graphical. Computers afforded the ability to play with numbers at an unprecedented apex of speed and scale. But like that first experience with a ball, there was much to be discovered. Before we fully mastered one computer, new ones, with new capabilities and new challenges, were developed.

Regardless, we played with making games, until the medium evolved into more complex goals. We turned to familiar experiences like choose your own adventure books and turned them into interactive fiction like

Zork (Anderson and Galley, 1985). We turned military simulation into *Missile Command* and car simulation into *Pole Position*. Each iteration looked to explore possibility playfully.

This is the foundation of play. Play is about exploration. Play also has no explicit end and no resolution. Play ends simply when we stop playing. The borders of play are wider and more complex than those of a game. Its rules are more opaque and its start and end is less apparent than a game.

Games, on the other hand, are structured play. Games take the ephemeral properties of play and the play state and turn them into something with a distinct start and a distinct end. Games structure interactive play. Games are discrete, with a measurable start and measurable end.

How do games structure play? First, they operate via toys. Toys are the unit of play. A ball is a common toy. The games we play with that toy vary, as in the difference between a tennis ball and a volleyball. Likewise, throw-catch volleyball changes significantly when played with a medicine ball (also known as a Hooverball). The toy helps shape the game and its rules.

Games structure the play, organizing the relationships between players and toys. The idea of a toy extends beyond physical games. Wordplay, for example, employs words or letters as toys. In many games, toys are the units of play. This is why for some toy-focused designs, game designers begin with a toy concept and then divine the rules from that toy (Figure 1.1).

Computers expanded the opportunities for play exceptionally. Computers function not only as toys, but they also provide new opportunities for toys. Toys in the physical world, for example, are limited by the physical properties of nature. Until we are playing volleyball on the moon, the core physical characteristics of tossing and hitting a ball over a net will

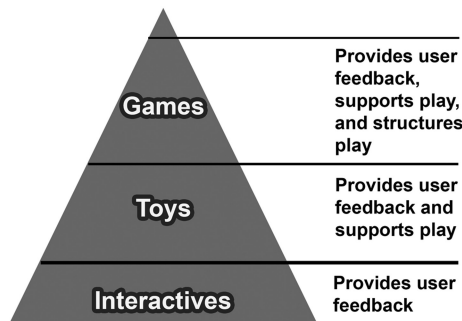


FIGURE 1.1 Interactives, toys, and games, a way of understanding different types of designs.

remain the same here on earth. But, with computers, we are able to simulate a variety of physical scenarios.

Beyond simulation, computers afford the creation of toys that are physically and sometimes mentally impossible. The millions of calculations make for complex models and prognostications. In short, the computer not only changed toys, they changed our concept and expectations of toys. They turned our imagined play experiences into the nuances of virtual pets or the scale of flying a million-dollar Mig-29 (NovaLogic, 1988). Digital play affords for the creation of new toys, resulting in new games. The computer was not just a toy, it offered a completely new possibility space.

1.3 WHAT'S NEXT

These are, of course, simplified definitions to provide orientation. Any explorer will note that in order to know where you are going, you must know where you are. This book is structured to help you understand where interaction, games, and play are, have been, and may go. This book is designed to provide both resource and guidance on the many ways in which play and games are employed to meet social impact agendas. Brian Sutton-Smith writes in *The Study of Games*, “Each person defines games in [their] own way—the anthropologists and folklorists in terms of historical origins; the military men, businessmen, and educators in terms of usages; the social scientists in terms of psychological and social functions. There is overwhelming evidence in all this that the meaning of games is, in part, a function of the ideas of those who think about them” (Avedon and Sutton-Smith, 1971).

Each reader of this book has a goal in reading. Perhaps you are interested in supporting a specific project. Perhaps you were assigned this book by someone who knows the field. Perhaps you are interested in learning about the ways your agendas can be supported by games. Each reader, like each player, has their own journey based on their starting point and their end goal.

In this journey, you'll notice that there are exceptions to rules. You'll also realize that there is far more left to explore than has been explored. It is hoped that you'll also find yourself willing, excited, and eager to employ play in more ways.

1.4 BOOK OVERVIEW

Before you start this journey, you'll want a map. This book is structured in three sections. The first is designed to provide an overview of the core concepts that apply broadly to social impact games and

purpose-driven play design. It is a good idea for all readers to read Section I completely.

Section II examines specific types of social impact play. These are large groupings of games aimed at improving education or physical and mental health, for example. This section is designed to be read either in order or as selected chapters in any order. A person who may be interested in creating a political game might want to read the chapter on education (Chapter 4) and then skip to the chapter on persuasive play (Chapter 7). This second section is designed to meet that need. Please choose your chapters appropriately, and feel free to read Section II in its entirety.

Section III is aimed at helping explain project implementation. It answers the who, what, where, and why for readers who will be engaged in making games and play. This includes project managers, independent developers, consultants, students, and those people who want to construct requests for proposals or hire others to create a project for them. This third section is your basic blueprint for understanding the elements common to the production of any social impact play project.

Like any blueprint or travel itinerary, you'll want to adjust it to your needs.

This book is designed to be useful to those who have never done such projects and for those who have. For those who have, this book should help focus, formalize, and inform your process. For those who haven't, consider this book a jumpstart to your journey. Whether your project is 2 weeks or 2 years, learning from the experience of others should make the project much smoother.

At the end of most chapters, there are some activities that should help you practice the topics outlined in the chapter. These are typically framed as a task and the kinds of questions a designer might ask when trying to accomplish the task. They're the kind of questions a reader can answer with a lot of experience or with no experience, because they are the kinds of questions that people who practice design ask.

Please keep in mind that the observations, framings, and recommendations from this book are informed by years of practicing game design. It's important to remember that design, any design, is a practice. It is practice in the same way that amateur and professional musicians practice an instrument. Such practice focuses on mastering skills and creative exploration. It's also practicing in the way that a medical professional practices medicine. There are many lessons learned, skills required, and standard

ways to address challenges, but each case is a new one with new ways to practice helping people.

REFERENCES

- Anderson, Tim, and Stu Galley. "The history of Zork." *The New York Times* 4, no. 1-3 (1985): 6-7.
- Avedon, Elliott M., and Brian Sutton-Smith. *The Study of Games*. New York: Wiley, 1971.
- Brown, Stuart L. *Play: How It Shapes the Brain, Opens the Imagination, and Invigorates the Soul*. New York: Penguin, 2009.
- Connors, Dennis A. "The school environment: A link to understanding stress." *Theory into Practice* 22, no. 1 (1983): 15-20.
- Huizinga, Johan. *Homo Ludens*. London: Routledge, 2014.
- Kent, Steven L. *The Ultimate History of Video Games: From Pong to Pokemon and Beyond: The Story Behind the Craze that Touched Our Lives and Changed the World*. New York: Three Rivers Press, 2010.
- Melissinos, Chris, and Patrick O'Rourke. *The Art of Video Games: From Pac-Man to Mass Effect*. New York: Welcome Books, 2012.
- Moore, Heidi. "Why Play is the Work of Childhood." Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College. Fred Rogers Center, 23 Sept. 2014.
- NovaLogic. *MiG-29 Fulcrum*. THQ Nordic, 1988.
- Sutton-Smith, Brian. *The Ambiguity of Play*. Cambridge, MA: Harvard University Press, 2009.

References

CHAPTER 1

- Anderson, Tim, and Stu Galley. "The history of Zork." *The New York Times* 4, no. 1–3 (1985): 6–7.
- Avedon, Elliott M., and Brian Sutton-Smith. *The Study of Games*. New York: Wiley, 1971.
- Brown, Stuart L. *Play: How It Shapes the Brain, Opens the Imagination, and Invigorates the Soul*. New York: Penguin, 2009.
- Connors, Dennis A. "The school environment: A link to understanding stress." *Theory into Practice* 22, no. 1 (1983): 15–20.
- Huizinga, Johan. *Homo Ludens*. London: Routledge, 2014.
- Kent, Steven L. *The Ultimate History of Video Games: From Pong to Pokemon and Beyond: The Story Behind the Craze that Touched Our Lives and Changed the World*. New York: Three Rivers Press, 2010.
- Melissinos, Chris, and Patrick O'Rourke. *The Art of Video Games: From Pac-Man to Mass Effect*. New York: Welcome Books, 2012.
- Moore, Heidi. "Why Play is the Work of Childhood." Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College. Fred Rogers Center, 23 Sept. 2014.
- NovaLogic. *MiG-29 Fulcrum*. THQ Nordic, 1988.
- Sutton-Smith, Brian. *The Ambiguity of Play*. Cambridge, MA: Harvard University Press, 2009.

CHAPTER 2

- Bizarre Creations. *Project Gotham Racing*. Microsoft, 2001.
- Brown, S. J. *Field Test of Captain Novolin with 23 Children*. Unpublished manuscript. Mountain View, CA: Raya Systems, 1993.
- Caillois, Roger. *Man, Play, and Games*. Champaign, IL: University of Illinois Press, 2001.
- Caillois, Roger, and Elaine P. Halperin. "The structure and classification of games." *Diogenes* 3, no. 12 (1955): 62–75.
- Frieberger, P. Video Game Takes on Diabetes Superhero "Captain Novolin" Offers Treatment Tips. San Francisco Examiner, (June 26, 1992), Fourth Edition, Business Section B, 1. 1992.

- Huizinga, Johan. *Homo Ludens*. London: Routledge, 2014.
- Meggs, Philip B., and Alston W. Purvis. *Meggs' History of Graphic Design*. Hoboken, NJ: John Wiley & Sons, 2011.
- Nintendo Creative Department. *Super Mario Bros*. Nintendo, 1985.
- Prensky, Marc. "Fun, play and games: What makes games engaging." *Digital Game-Based Learning* 5, no. 1 (2001): 5–31.
- Sculptured Systems. *Captain Novolin*. Raya Systems, 1992.
- Seanbaby. "20 worst games of all time." *Electronic Gaming Monthly*, no. 150 (2009).
- Smith, Peter K. "Does play matter? Functional and evolutionary aspects of animal and human play." *Behavioral and Brain Sciences* 5, no. 1 (1982): 139–155.
- Sutton-Smith, Brian. *The Ambiguity of Play*. Cambridge, MA: Harvard University Press, 2009.
- Street, Richard L., William R. Gold, and Timothy R. Manning. *Health Promotion and Interactive Technology: Theoretical Applications and Future Directions*. New York: Routledge, 2013.
- Van Hoorn, Judith Lieberman, Patricia Monighan-Nourot, Barbara Scales, and Keith Rodriguez Alward. *Play at the Center of the Curriculum*. New York: Pearson, 2014.

CHAPTER 3

- 11 bit studios. *This War of Mine*. 11 bit studios, 2014.
- Accidental Queens. *Another Lost Phone: Laura's Story*. Accidental Queens, 2017. <http://anotherlostphone.com/>.
- Bogost, Ian. 10th Games for Change Festival. 2013. <https://www.youtube.com/watch?v=GBduFJUdoog>.
- Brown, Mark. "Apple bans Phone Story game that exposes seedy side of smartphone creation." *Wired Game| Life* (2011) <https://www.wired.com/2011/09/phone-story/>.
- Brown, Stuart L. *Play: How it Shapes the Brain, Opens the Imagination, and Invigorates the Soul*. New York: Penguin, 2009.
- Burgess, Melinda C.R., Karen E. Dill, S. Paul Stermer, Stephen R. Burgess, and Brian P. Brown. "Playing with prejudice: The prevalence and consequences of racial stereotypes in video games." *Media Psychology* 14, no. 3 (2011): 289–311.
- Campbell, Joseph. *The Hero with a Thousand Faces*, Vol. 17. Novato, CA: New World Library, 2008.
- Capcom. *Bionic Commando*. Capcom, 1988.
- Deterding, Sebastian. "Gamification: Designing for motivation." *Interactions* 19, no. 4 (2012): 14–17.
- Ellen Games, *Heads Up*. Warner Bros., 2017.
- Epic Games. *Fortnite*. Epic Games, 2017.
- Flanagan, Mary. *Critical Play: Radical Game Design*. Cambridge, MA: MIT Press, 2009.

- Foddy, Bennett. *QWOP*. Bennett Foddy, 2008. <http://www.foddy.net/Athletics.html>.
- Fullerton, Tracy. *Game Design Workshop: A Playcentric Approach to Creating Innovative Games*. Boca Raton, FL: AK Peters/CRC Press, 2014.
- Grace, Lindsay D. “Critical gameplay: Designing games to critique convention.” In *Proceedings of the 20th ACM International Conference on Multimedia*, 1185–1188. ACM, 2012.
- Hunicke, Robin, Marc LeBlanc, and Robert Zubek. “MDA: A formal approach to game design and game research.” *Proceedings of the AAAI Workshop on Challenges in Game AI* 4, no. 1 (2004): 1722.
- Liu, Chen-Chung, Yuan-Bang Cheng, and Chia-Wen Huang. “The effect of simulation games on the learning of computational problem solving.” *Computers & Education* 57, no. 3 (2011): 1907–1918.
- Mojang. *Minecraft*. Mojang, 2009.
- Molleindustria. *Phone Story*. Molleindustria, 2011. <http://www.phonestory.org/>.
- Nintendo EAD. *Mario Kart 8 Deluxe*. Nintendo, 2017.
- O’Neill, Cecily, and Alan Lambert. *Drama Structures*. London: Hutchinson, 1982.
- The Pixel Hunt. *Bury Me, My Love*. Dear Villagers, 2017. <http://burymemylove.arte.tv/>.
- Rankin, Yolanda A., Rachel Gold, and Bruce Gooch. “Evaluating interactive gaming as a language learning tool.” In *Proceedings for ACM SIGGRAPH Conference, New York*. 2006.
- Rockstar North. *Grand Theft Auto V*. Rockstar Games, 2013.
- Rosser, James C., Paul J. Lynch, Laurie Cuddihy, Douglas A. Gentile, Jonathan Klonsky, and Ronald Merrell. “The impact of video games on training surgeons in the 21st century.” *Archives of Surgery* 142, no. 2 (2007): 181–186.
- Ruiz, Susana, Ashley York, Mike Stein, Noah Keating, and Kellee Santiago. *Darfur is Dying*. 2006. <http://www.darfurisdying.com>.
- Russell, Steve. *Spacewar!* Steve Russell, 1962.
- Salen, Katie, and Eric Zimmerman. *Rules of Play: Game Design Fundamentals*. MIT Press, Cambridge, 2004.
- Spracklen, Kathe and Dan Spracklen. *Sargon*. Kathe Spracklen and Dan Spracklen. , 1978.
- Sutton-Smith, Brian. *The Ambiguity of Play*. Cambridge, MA: Harvard University Press, 2009.
- Tavinor, Grant. “Bioshock and the art of rapture.” *Philosophy and Literature* 33, no. 1 (2009): 91–106.
- Team Fugl. *Fugl*. Kotori Studios Ltd., 2017. <http://fuglgame.com/>.
- Thatgamecompany. *Journey*. Sony Computer Entertainment, 2012.
- Thatgamecompany. *Flower*. Sony Computer Entertainment, 2009.
- Urban Ministries of Durham. *Spent, the online game about surviving poverty and homelessness reaches its millionth play and invites Congress to accept the challenge* [Press release]. 2011. http://www.umdurham.org/assets/files/pdf/SPENTImmRelease_FINAL.pdf.
- Vonnegut, Kurt. *Slaughterhouse 5*. 1969. London: Triad, 1987.

Yee, Nick. “The gamer motivation profile: What we learned from 250,000 gamers.” In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play*. ACM, 2016.

CHAPTER 4

Atari, Inc. *Missile Command*. Atari Inc., 1980.

Gee, James Paul. “Learning by design: Good video games as learning machines.” *E-learning and Digital Media* 2, no. 1 (2005): 5–16.

Harmonix. *Rock Band*. MTV Games, 2007.

Konami. *Dance Dance Revolution*. Konami, 1998.

Nintendo EAD. *Super Mario Kart*. Nintendo, 1992.

Pokémon [card game]. Creatures Inc. 1996.

Polys Entertainment. *Gran Turismo*. Sony Computer Entertainment, 1997.

PopCap. *Bejeweled*. Electronic Arts, 2001.

Rawitsch, Don, Bill Heinemann, and Paul Dillenberger. *Oregon Trail*. MECC, 1974.

Sirius Software. *Type Attack*. Sirius Software, 1982.

Taito. *Space Invaders*. Taito, 1978.

Tolkien, John Ronald Reuel. *The Hobbit*. London: George Allen & Unwin, 1937.

Ubisoft Montreal. *Assassin’s Creed 3*. Ubisoft, 2012.

Uno. Mattel. 2014.

CHAPTER 5

Anguera, Joaquin A., Jacqueline Boccanfuso, James L. Rintoul, Omar Al-Hashimi, Farhoud Faraji, Jacqueline Janowich, Eric Kong et al. “Video game training enhances cognitive control in older adults.” *Nature* 501, no. 7465 (2013): 97.

Green, C. Shawn, and Daphne Bavelier. Action video game modifies visual selective attention. *Nature* 423, no. 6939 (2003): 534.

Huizinga, Johan. *Homo Ludens*. New York: Routledge, 2014.

Kato, Pamela M., Steve W. Cole, Andrew S. Bradlyn, and Brad H. Pollock. “A video game improves behavioral outcomes in adolescents and young adults with cancer: A randomized trial.” *Pediatrics* 122, no. 2 (2008): e305–e317.

Martin, Daniel, and Gary Alan Fine. “Satanic cults, Satanic play: Is Dungeons and Dragons a breeding ground for the Devil?” *The Satanism Scare*, Edited by Joel Best, New York: Taylor and Francis, 1991, 107–123.

Neuroscape. <https://neuroscape.ucsf.edu/>.

Old Maid [card game]. <https://www.bicyclecards.com/how-to-play/old-maid/>.

TRU LUV. #SelfCare. TRU LUV, 2018. <http://truluv.ai/selfcare/>.

Sutton-Smith, Brian. “Evolving a consilience of play definitions: Playfully.” *Play and Culture Studies* 2 (1999): 239–256.

Wittek, Charlotte Thoresen, Turi Reiten Finserås, Ståle Pallesen, Rune Aune Mentzoni, Daniel Hanss, Mark D. Griffiths, and Helge Molde. “Prevalence and predictors of video game addiction: A study based on a national representative sample of gamers.” *International journal of mental health and addiction* 14, no. 5 (2016): 672–686.

CHAPTER 6

- Bithell, Mike. *Thomas Was Alone*. Mike Bithell, 2012.
- Bogost, Ian, and Cindy Poremba. "Can games get real? A closer look at 'Documentary' digital games." In *Computer Games as a Sociocultural Phenomenon*, 12–21. London: Palgrave Macmillan, 2008.
- Bogost, Ian, Simon Ferrari, and Bobby Schweizer. *Newsgames: Journalism at Play*. MIT Press, Cambridge 2012.
- Crecente, Brian. War Crimes in Video Games Draw Red Cross Scrutiny. Kotaku. December, 11, 2011. <https://kotaku.com/war-crimes-in-video-games-draw-red-cross-scrutiny-5863817>
- Empathetic Media. *Ferguson Firsthand*. Empathetic Media, 2015. <http://www.empatheticmedia.com/virtual-reality/>.
- Frasca, Gonzalo. Simulation versus narrative: Introduction to ludology. In Mark J. P. Wolf and Bernard Perron (Eds.), *The Video Game Theory Reader*, 221–235. New York: Routledge, 2003.
- Frasca, Gonzalo, S. Battezzato, N. Olhaberry, P. Infantozzi, F. Rodriguez, and F. Balbi. *September 12th*. Newsgaming.com, 2003. newsgaming.com/games/index12.htm.
- Grace, Lindsay. "Gamifying archives, a study of docugames as a preservation medium." In *Computer Games (CGAMES), 2011 16th International Conference*, 172–176. IEEE, Louisville, 2011.
- Infinity Ward. *Call of Duty*. Activision, 2003.
- Koch, Howard. *The Panic Broadcast; Portrait of an Event*. Little, Brown, New York, 1970.
- Kopas, Merritt. *Lim*. Games for Change, 2012. <http://www.gamesforchange.org/game/lim/>.
- Kuma Reality Games. *Kuma\War*. Kuma Reality Games, 2008.
- Narcisse, Evan. *Thomas Was Alone: The Kotaku Review*. 2012. <https://kotaku.com/5929049/thomas-was-alone-the-kotaku-review>.
- Pope, Lucas. *The Republic Times*. Lucas Pope, 2013. <http://dukope.com/play.php?g=trt>.
- Ruiz, Susana, Ashley York, Mike Stein, Noah Keating, and Kellee Santiago. *Darfur is Dying*. <http://www.darfurisdying.com>. 2006.
- Sicart, Miguel. "Newsgames: Theory and design." In *International Conference on Entertainment Computing*, 27–33. Berlin, Heidelberg: Springer, 2008.
- Traffic Games. *JFK Reloaded*. Traffic Games, 2004.
- Wells, Herbert George. *The War of the Worlds*. London: William Heinemann, 1898.
- Wilson Center. *Budget Hero*. Wilson Center, 2008. <https://www.wilsoncenter.org/budget-hero>.

CHAPTER 7

- Bogost, Ian. *Persuasive Games: The Expressive Power of Videogames*. Cambridge, MA: MIT Press, 2007.

- Breakthrough. *ICED: I Can End Deportation*. Breakthrough, 2008. <http://www.icedgame.com/>.
- Djaouti, Damien, Julian Alvarez, Jean-Pierre Jessel, and Olivier Rampoux. "Origins of serious games." In Minhua Ma, Andreas Oikonomou, and Lakhmi C. Jain, eds., *Serious Games and Edutainment Applications*, 25–43. London: Springer, 2011.
- Elite Systems. *Ford Racing*. Empire Interactive, 2000.
- Mini USA. *Mini Jump*. MiniUSA.com, 2005. <http://www.gamesbob.com/minijump>.
- Molleindustria. The Best Amendment. Molleindustria, 2013. <http://www.molleindustria.org/the-best-amendment/>.
- Razorworks. *Ford Racing Off Road*. Xplosiv, 2008.
- SCEE Internal Development Team. *Porsche Challenge*. Sony Computer Entertainment, 1997.
- Schädler, Ulrich. "‘Juden Raus!’ (Jews Out!)—History’s most." *International Journal for the Study of Board Games CNWS* (2003, 6): 47.
- Tiltfactor, Awkward Moment, 2019. <https://tiltfactor.org/game/awkward-moment/>.
- Wilson, Mark. 2012. How Do Real Cars End up in Video Games. <https://www.fastcompany.com/1669990/how-do-real-cars-end-up-in-video-games-and-does-it-help-the-brands>.

CHAPTER 8

- 11 bit studios. *This War of Mine*. 11 bit studios, 2014.
- Antonisse, Jamie, and Devon Johnson. *Hush*. Jamie Antonisse and Devon Johnson, 2007.
- Brice, Mattie. "Postpartum: Mainichi—how personal experience became a game." *Mattie Brice—Alternate Ending* (2012). <http://www.mattiebrice.com/postpartum-mainichi-how-personal-experience-became-a-game/>
- Cox III, James Earl. *[US]SR*. Seemingly Pointless, 2013.
- DMA Design. *Grand Theft Auto*. BMG Interactive, 1997.
- Ebert, Roger. "Video games can never be art." <https://www.rogerebert.com/rogers-journal/video-games-can-never-be-art>.
- Ebert, Roger. Walk of Fame Remarks. 2005. <https://www.rogerebert.com/rogers-journal/eberts-walk-of-fame-remarks>.
- Greitemeyer, Tobias, Silvia Osswald, and Markus Brauer. "Playing prosocial video games increases empathy and decreases schadenfreude." *Emotion* 10, no. 6 (2010): 796.
- MECC. *Oregon Trail*. MECC, 1985.
- Namco. *Pac-Man*. Namco, 1980.
- Pandemic. Mahopac, NY: Z-Man Games. 2008.
- Reiff, Tilman, and Volker Morawe. *Painstation*. 2001.
- Ruiz, Susana, Ashley York, Mike Stein, Noah Keating, and Kellee Santiago. *Darfur is Dying*. 2006. <http://www.darfurisdying.com>.
- Stenros, Jaakko, and Markus Montola. Nordic LARP. 2010. <http://tampub.uta.fi/handle/10024/95123>.
- Square. *Final Fantasy*. Square, 1987.

- Tarantino, Quentin. *Kill Bill: Vol. I & II*. TF1 Vidéo, 2004.
- Thatgamecompany. *Journey*. Sony Computer Entertainment, 2012
- Yager Development. *Spec Ops: The Line*. 2K Games, 2012.

CHAPTER 9

- ActiWait. *Streetpong*. AcitWait, 2014. <http://www.streetpong.info/>.
- Art of the H3ist. McKinney. 2005. <https://mckinney.com/campaigns/art-of-the-h3ist/>.
- Dorward, Leejah J., John C. Mittermeier, Chris Sandbrook, and Fiona Spooner. “Pokémon Go: Benefits, costs, and lessons for the conservation movement.” *Conservation Letters* 10, no. 1 (2017): 160–165.
- Facepunch Studios. *Garry’s Mod*. Valve Corporation, 2004.
- Frith, Jordan. “The digital ‘lure’: Small businesses and Pokémon GO.” *Mobile Media & Communication* 5, no. 1 (2017): 51–54.
- I love Bees. 42 Entertainment. 2004. <http://www.42entertainment.com/work/ilovebees>.
- Kondamudi, Pavan Ravikanth, Bradley Protano, and Hamed Alhoori. “Pokémon Go: Impact on Yelp restaurant reviews.” In *Proceedings of the 2017 ACM on Web Science Conference*, 393–394. New York: ACM, 2017.
- McGonigal, Jane, and Ian Bogost. *Cruel 2 B Kind*. 2006. <http://www.cruelgame.com/games/>.
- Mojang. *Minecraft*. Mojang, 2009.
- Niantic. *Pokémon Go*. Niantic, 2016.
- Roblox Corporation. *Roblox*. Roblox Corporation, 2005.
- Tassi, Paul. “Pokémon GO has made \$1.8 billion as it turns two years old.” *Forbes*, <https://www.forbes.com/sites/insertcoin/2018/07/09/pokemon-go-has-made-1-8-billion-as-it-turns-two-years-old/#77d3a0ac4655>.
- Tateno, Masaru, Norbert Skokauskas, Takahiro A. Kato, Alan R. Teo, and Anthony P. S. Guerrero. “New game software (Pokémon Go) may help youth with severe social withdrawal, hikikomori.” *Psychiatry Research* 246 (2016): 848.

CHAPTER 10

- Coren, Michael J. “Foldit gamers solve riddle of HIV enzyme within 3 weeks.” *Scientific American* (2011). <https://www.scientificamerican.com/article/foldit-gamers-solve-riddle/>
- ESP Game. 2008. <http://www.gwap.com/gwap/gamesPreview/espgame/>.
- Grace, Lindsay D. “Heuristics from curating and exhibiting game art in the 21st century.” In *Proceedings of the 8th International Conference on Digital Arts*, 101–108. ACM, 2017.
- Grace, Lindsay. *Social Impact through Exhibition*. Games for Change 2015. Video at https://youtu.be/ygSD__45Etc.

- Grace, Lindsay D. “The poetics of game design, rhetoric and the independent game.” In Digital Games Research Association (DiGRA) Conference, Utrecht, Netherlands, 2011.
- Grace, Lindsay D., and Peter Jamieson. “Gaming with purpose: Heuristic understanding of ubiquitous game development and design for human computation.” In Marios C. Angelides and Harry Agius, eds., *Handbook of Digital Games*, 2014, 645–666.
- Hacker, Severin, and Luis von Ahn. Matchin: Eliciting user preferences with an online game. In *International Conference on Human Factors in Computing Systems*, Boston, 1207–1216. 2009.
- Jenkins, Henry. “Games, the new lively art.” In Joost Raessens and Jeffrey Goldstein, eds., *Handbook of Computer Game Studies*. Cambridge, MA: MIT Press, 2005, 175–189.
- Klausen, Arne Martin, ed. *Olympic Games as Performance and Public Event: The Case of the XVII Winter Olympic Games in Norway*. New York: Berghahn Books, 1999.
- LeBlanc, Allana G., and Jean-Philippe Chaput. “Pokémon Go: A game changer for the physical inactivity crisis?” *Preventive Medicine* 101 (2017): 235–237.

CHAPTER 11

- Choi, Judeth Oden, Jodi Forlizzi, Michael Christel, Rachel Moeller, MacKenzie Bates, and Jessica Hammer. “Playtesting with a purpose.” In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play*, 254–265. New York: ACM, 2016.
- Sicart, Miguel. *The Ethics of Computer Games*. Cambridge, MA: MIT Press, 2011.