AN ANNOTATED ANALYSIS OF CONTEMPORARY GAME DESIGN LITERATURE

An Interactive Qualifying Project Report

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ABSTRACT

This project examines the current state of computer game design literature by comparing and analyzing twelve of the most popular game design textbooks. It is determined that few textbooks labeling themselves as "game design" books actually provide useful insight into the practice of game design and even fewer attempt to construct a theory of it. Two observations have been made: there is a need for more textbooks about game design theory and there is a glut of superficial, useless books.

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CHAPTER 1: INTRODUCTION

Video game design is a new and emerging field which has only recently started to get attention in the realm of academia. The DigiPen Institute of Technology was the first school in the United States to offer a program in game development, opening in 1994. Since then, many other schools have begun to offer similar programs, including WPI's own Interactive Media and Game Development (IMGD) major. As the field of game design has grown in prominence, more and more books on the topic have appeared on the market. The format of these books varies widely, from brainstorming aids to collections of interviews to chronicles of the industry's history.

This project is a detailed look at the current state of game design textbooks. The primary objective is to analyze some of the most popular literature and identify trends, as well as to form a system of classification in order to assist educators, students, and enthusiasts in selecting a book that meets their needs. Another goal of this project is to determine what aspects of game design are not being adequately covered by literature and propose new books to fill the gaps. The final objective is to make recommendations about the role of game design literature in a classroom setting.

We have seen a prominent trend in the literature toward quality over quantity. While there are a number of good and worthwhile books about game design, there are many more that are either generic or simply inadequate. Overall, while textbooks may have a place in the game design classroom, both the place of these textbooks and which textbooks are used is something that must be carefully considered by each educator based on each class' context and goals.

CHAPTER 2: METHODOLOGY

Initially, this project was intended to be a broad analysis of a variety of different aids to game design education, including textbooks, game engines, and instructor-assigned project work. By using the viewpoints of authors and instructors to synthesize a list of goals for game design education, we intended to take a look at which students' needs were being met by existing textbooks, engines, and projects and where needs were not being addressed. Once these holes in game design education were identified, we intended to recommend changes to curricula and propose new tools (both books and engines) in order to ensure that the needs of students of game design would be met.

To determine what the learning outcomes of game design education should be and how they are currently being met, our research dealt primarily with two sources of information: instructors of game design and literature about game design. We initially began our research by placing a heavy emphasis on the input and testimony of university professors, but gradually shifted toward our current focus on game design textbooks as the project progressed.

In the early stages of our research, we attempted to contact and survey teachers regarding their teaching methodology and any engines or tools they used in the process of teaching game

design. We later decided to conduct a brief survey of game design textbooks, as assigned reading often plays a significant role in the educational process. After experiencing a series of difficulties in conducting our survey, we were forced to forego collecting data from instructors and focus entirely on literature.

2.1: SURVEY METHODOLOGY

We began our preparation to survey game design instructors by first compiling a list of noteworthy game design institutions and programs. Our list was based on a number of sources, such as rankings of top game development programs (for example, the *Princeton Review*). We compiled a series of questions inquiring about course goals, expected student background, which textbooks were being used, what projects were assigned, and what supplementary tools were being used. We were interested in what tools, programs, engines, and programming languages were being used, as well as the perceived limitations of these tools and what qualities an ideal tool for facilitating the teaching of game design would have (see Appendix A).

Having written our survey, we began to work toward contacting the teachers of the programs we had selected. The teachers that we successfully contacted seemed receptive in general, although the number of questions and the amount of information requested was apparently somewhat off-putting. As a result, we later converted our survey to a web-based format on Google Docs in order to make the process of responding to our questions much quicker and easier (see Appendix B).

2.2: UNEXPECTED DIFFICULTIES

We encountered significant difficulties over the course of conducting our survey, which caused us to eventually abandon our survey-based research approach. The greatest of these was the difficulty we had in actually contacting teachers. While we were able to obtain contact information for each of the schools and programs, finding contact information for individual professors proved to be an insurmountable hurdle. As we found, many schools restrict such information to currently-enrolled students alone. Most require any external inquiries to go through either their admissions office or the university's information office. We found these offices to be frequently unresponsive and the various school bureaucracies to be impenetrable from the outside. This proved to be an unexpected obstacle to us, as WPI's own Interactive Media and Game Development program has a publicly-accessible list of faculty and contact information. We assumed at the time that obtaining contact information for the faculty at other institutions would be just as straightforward.

This discovery proved to be an interesting insight into our research; without openness and communication between different instructors and programs for game design, how can a meaningful discussion about the goals of game design education take place? Without the ability to survey what is being taught in classrooms and what student needs are not being met, then how can these needs ever be identified and filled? As long as the community of game design education remains walled off and segmented into separate microcosms, prospects for innovation and sharing knowledge in order to better the field remain dim.

Having spent several weeks trying to gather information from teachers without much success, we chose to abandon our original idea and focus on a more accessible source of

information: game design literature. Without any data to analyze regarding current teaching methods, we would be unable to draw conclusions about how to meet the needs of students, but analyzing currently-existing literature would at least give us insight into what authors believe is important for game design students and enthusiasts to know.

2.3: Literature Analysis

We began by creating a list of all the books about game design that we could find. Once we had constructed our list, we selected a number of books to focus on, prioritizing ones based on the limited responses from our instructor survey and based on the recommendations of Brian Moriarty, an instructor of game design in WPI's Interactive Media and Game Development program and this project's advisor. Once our list of books was compiled, we began the task of reading and analyzing each one. We then performed a detailed review of each book, giving an objective summary of the book's content, a chapter-by-chapter summary, a representative quote from each chapter, and an analysis of the book's usefulness as a whole. We examined trends evident in the books we reviewed and came to conclusions based on the data we collected over the course of the project. Finally, we formed a set of recommendations for educators, students, and enthusiasts who want to choose a book to suit their needs as well as formed proposals for new books that should exist to fill in the holes left by existing literature.

Chapter 3: Findings

The primary objective of this project was to analyze the current state of game design literature and in doing so, identify any apparent trends. This section includes a detailed annotation of each of the surveyed books along with a description of each book's approach and usefulness.

3.1: Annotated Analysis of Game Design Books

Adams, Ernest and Rollings, Andrew. *Andrew Rollings and Ernest Adams on Game Design*. Berkeley: New Riders Games, 2003. Print.

This book is divided into two parts, with the first exploring the basic concepts of game design and the second describing traits of popular game genres. The first part of the book walks the reader through the process of designing a game and crafting a game design document. It touches upon the fundamental elements of a game, designing gameplay, developing a setting and story, and populating the setting with characters. The second part of the book mentions common elements used in popular game genres and raises questions to think about when designing a game of that genre.

Selected quote:
"Challenges come in many shapes and forms. Even within a genre, a good game presents a range of challenge types. The narrower the genre definition is, the narrower the range is, but this is usually not a problem. Game players who buy within genres tend to know what to expect. In fact,

unless it is particularly well done and appropriate, they generally reject new forms of challenge as inappropriate to the genre in question."

Chapter 1. What Is Game Design?

This chapter defines game design and game design documents as well as discusses the required skills of a game designer.

Selected quote:
"Given the amount of money routinely sunk into these technological powerhouse products, it seems amazing that more money is not spent on producing a decent game design. In many cases, the game design is an amalgamation of the "best" ideas of the development team. This works so rarely that when it is successful, the process is widely publicized and the publicity gives the impression that this is the best way to design a game. You might have heard the saying a camel is a horse designed by committee. Nowhere is this more applicable than the game industry."

Chapter 2. Game Concepts

This chapter outlines the fundamental elements of a game along with methods of getting inspiration for a game idea.

Selected quote:
"One idea isn't enough. It's a common misconception that a brilliant game idea will make you a fortune. In fact, this occurs extremely rarely. You might think you have the game idea of the century, but concentrating on it without bothering to think about other game ideas is a little like pinning all your hopes on a single lottery ticket and not bothering to get up for work while you wait to see if your numbers come up. Unlike lottery tickets, ideas are free, so think about new ones constantly."

Chapter 3. Game Settings and Worlds

The importance of having a game setting and the aspects that constitute one are discussed along with the pros and cons of allowing the player to save their game.

Selected quote:
"We believe the "graphics versus gameplay" debate is no longer a meaningful one. The truth is that graphics and gameplay must work together to produce the total play experience. The graphics create the setting, which both sells the game and involves the player in the game's fantasy. The gameplay provides the challenge and things for the player to do. Both are essential to the player's enjoyment of the game. The graphics bring in the player, and the gameplay keeps him there."

Chapter 4. Storytelling and Narrative

The purpose of having a story in games is discussed along with core storytelling concepts such as the Hero's Journey and the basics of plot pacing.

Selected quote:
"Commonly, the backstory is used to provide a framework for a mission-based game structure. For the majority of games, this is the ideal approach. As the complexity of the game increases, the relative importance of the story to the gameplay can (but does not have to) increase."

Chapter 5. Character Development

Two different approaches to character design are discussed: building characters around their visual design and building characters around their role in the story.

Selected quote:
"The most important thing to do with the hero is ensure that the players can identify with the character. The hero should have qualities that the players can appreciate and empathize with. The hero's goals should become the player's goals. How you choose to implement this depends very much on the nature of the hero. "

Chapter 6. Creating the User Experience

The principle elements of user experience are listed and the components which make up user interface are described.

Selected quote:
"Designing a good user interface is not about how beautiful and whizzy you can make your buttons. In fact, the core essence of the user experience—enabling the player to interact with the game world—doesn't need any fancy graphics or sound. The functionality that allows a player to interact with the game effectively could theoretically be implemented using simple placeholder elements. In fact, while the interface is being designed, this is the recommended approach—it's faster, and more resource-efficient."

Chapter 7. Gameplay

This chapter contains little more than a definition of gameplay and related terminology.

Selected quote:
"Pure challenges are the archetypal form of gameplay challenges. They are not often found in the wild in this form, but they form the basis for most, if not all, actual gameplay challenges. We first discuss the possible forms that pure challenges can take, and then we discuss how these can be applied to real gameplay situations."

Chapter 8. The Internal Economy of Games and Game Balancing

The definition of game balance and the different types of balance are discussed, providing little more than a cursory explanation for terms without describing how they can be applied.

Selected quote:
"A strongly dominant strategy is never desirable, but care should be taken when excising weakly dominant strategies—sometimes they can be valuable (for example, forcing a draw in chess). When eliminating a weakly dominant strategy, make sure you're not throwing the baby out with the bath water."

The following chapters contain nothing more than descriptions of different game genres and superficially highlight some of the considerations raised when designing a game of that genre. They offer nothing of use and serve as little more than padding.

Chapter 9. Action Games

Chapter 10. Strategy Games

Chapter 11. Role-Playing Games

Chapter 12. Sports Games

Chapter 13. Vehicle Simulations

Chapter 14. Construction and Management Simulations

Chapter 15. Adventure Games

Chapter 16. Artificial Life, Puzzle Games, and Other Genres

Chapter 17. Online Games
Advantages and disadvantages inherent in designing online games are discussed as well as design issues such as chat, security, and persistent worlds. This is the only of the genre chapters that contains potentially useful information, but most readers will likely find its contents to be common sense.

Selected quote:
"Players can log on wanting to play your game at any time, and the game has to be capable of dealing with them intelligently. In most noncomputer games, all the players must be present at the beginning of the match, or it won't be fair. In Monopoly, for example, anyone who entered the game late would be at a significant disadvantage—the others would have already grabbed the best properties, and the game's built-in inflation would swiftly bankrupt them."

Chapter 18. The Future of Gaming
The evolution of game hardware, networking, and genres are discussed, including topics such as location-based gaming, virtual reality and digital distribution.

Selected quote:

"One thing is certain: For interactive entertainment to grow, we have to be open-minded and willing to explore. Why didn't American game designers invent the dance simulation themselves? Probably because the idea of making a game about little girls dancing was just too uncool. The notion that gamers are all adolescent boys is clearly outdated, yet many designers persist in building games as if they were the only market."

As a whole, the book prefers to explain rather than to analyze. Although it lists a large number of considerations for designing a game, it never bridges the gap between considering a problem and developing a solution for it. Much of what the book describes is common sense to anyone with a passing interest in games and, in spite of its verbosity, it offers little to anyone looking to learn more about the theory or practice of game design.

BATEMAN, CHRIS, AND BOON, RICHARD. *21ST CENTURY GAME DESIGN*. HINGHAM, MA: CHARLES RIVER MEDIA, 2006. PRINT.

21st Century Game Design takes game development and examines it from the point of view of market demographics. The first third of the book is spent breaking up the game market into a number of audiences and categorizing them. It then continues by looking at the process of game development, and giving suggestions on how to improve each step and decision by considering the impact they will have on the game's appeal to the target audience. *21st Century Game Design* concludes by describing a large number of game genres, the market appeal of each, and how they have changed over time.

Chapter 1. Zen Game Design

This chapter makes the claim that there is no single ideal method for game design and that one's method of game design should adapt to fit the context and goals of the game.

Selected quote:
"You cannot learn objectively about anything – including design."

Chapter 2. Designing for the Market

This chapter describes the importance of considering one's target audience during game design, and looks at a few ways to fit game design to one's intended market."

Selected quote:
"Thinking in terms of market vector allows a game designer to consider who is being targeted by a game and adjust the design accordingly."

Chapter 3. Myers-Briggs Typology and Gamers

This chapter contains a brief explanation of Myers-Briggs typology and how it can be applied to learn about a target audience.

Selected quote:
"Use of the Myers-Briggs dichotomies can provide a useful way in which game designers can understand players different from themselves."

Chapter 4. The DGD1 Demographic Model

This chapter contains a description of the Demographic Game Design 1 model, which separates players into 1 of 4 play style demographics (conqueror, manager, wanderer, participant) based on Myers-Briggs preferences. The author then uses this model to break down and analyze the gaming market.

Selected quote:
"Market-oriented design can help any project succeed commercially by assessing the audience for a product before design is initiated."

Chapter 5. Player Abilities

This chapter contains a discussion of what types of games appeal to each play style and of how player temperament and ability should be taken into account during design.

Selected quote:
"To give a video game player an optimal experience – to keep them in the experience of flow – we must be careful therefore to deliver an experience that uses their skills and abilities to produce the kind of gameplay or toyplay that they desire."

Chapter 6. Foundations of Game Design

This chapter starts by breaking the process of designing a game into 4 periods, and giving a description of each. It then goes on to discuss the merits and problems with focused and flexible design, and the importance of maintaining a balance of each during design.

Selected quote:
"Every game designer wants the opportunity to be inventive, but such unbounded creativity can be the most expensive part of any video game project."

Chapter 7. Principles of Interface Design

Advice on how to create interfaces, learning curves, control schemas, and tutorials which make your game accessible and enjoyable for players and on how the design for such elements should be altered based on the game's target audience.

Selected quote:
"Because the game interface effectively connects the player to the game, interface design is of great importance to the designer's goal of creating games that provide enjoyment to specific audiences."

Chapter 8. Game World Abstraction

This chapter discusses both the process and necessity for creating a description of a game's world, gameplay mechanics, and the way in which the player perceives both of them. It also covers a number of important factors that should be considered when making such a portrayal.

Selected quote:
"Game world abstractions state the rules of the world the game is set in: the nature of the game world, the players' potential interactions with that world, and the manner in which that world is represented."

Chapter 9. Avatar Abstractions

This chapter explains how to describe a player's presence in the game world, as well as the way in which the player interacts with the world. Also examines aspects of the player's representation that can be quantified, such as health and inventory.

Selected quote:
"The avatar makes the world by their very presence, and in the absence of an avatar to act as an observer, nothing but raw data exists."

Chapter 10. Game Structures

This chapter examines the ways in which players may progress through a game and its world, and mechanisms by which a game developer may alter or direct a player's progress to control the pacing of a game. It also looks at how different game-save mechanisms alter a game's flow.

Selected quote:
"By considering the structural needs of different players, you can determine the optimal structures for different games – you are able to use cheap-to-produce linear structures when the audience will not balk at such an approach and provide the diverse benefits of a playground world only when the game's audience is sufficiently large to justify the expense."

Chapter 11. Action Game Genres

This chapter describes a large number of game genres, specifically those that fall into the category of "action games", and how each has evolved over time, starting from the game which created the genre.

Selected quote:
"Genres must exist because games demonstrate similar features to one another; it is these aspects of similarity that can be said to define that genre."

Chapter 12. Genres: Quest, Strategy, and Simulation

This chapter describes more game genres which are from the categories of "quest", "strategy", and "simulation", as well as a number of miscellaneous genres that do not easily fall into a general category.

Selected quote:
"The majority, if not all, of traditional play forms have been converted to computer at one time or another."

Chapter 13. The Evolution of Games: Originality and Chreodes

This chapter contains an extended metaphor which uses biology to help explain the manner in which the game market and industry have evolved, as well as the pattern of sequels and clones that occurs in any established genre.

Selected quote:
"Computer games have been driven by originality, but sustained by conservatism."

This is a book concerned with modernizing the process of game design for the game industry of today. It seeks to convert game design into a science, by which a careful designer can optimize a game to have the maximum market appeal. There seems to be higher priority placed on producing games that sell well than on producing games that are enjoyable, but this may be more due to the book's focus on succeeding in the game industry than anything else. Overall, *21st Century Game Design* does not cover the basics of game design, and would likely be unsuitable for new students of game design. Rather, it would likely be of greatest use to those looking to refine their techniques to be more competitive in the modern game industry.

BRATHWAITE, BRENDA AND SCHREIBER, IAN. *CHALLENGES FOR GAME DESIGNERS*. BOSTON: CHARLES RIVER MEDIA, 2008. PRINT.

Challenges for Game Designers explores the topic of game design from a bottom-up and non-technical perspective. Its concise writing and discussion of basic topics makes it suitable for beginners while still offering something to learn for veterans in the form of challenges. Each chapter contains a list of non-digital design challenges which encourage the reader to think outside the box and to work under increasingly unusual constraints.

One such example of these challenges involves choosing a game marketed toward the casual audience (such as *Bejeweled* or *Peggle*). The goal of this challenge is to propose a design for a variant of this game marketed toward the hardcore competitive gamer market, replacing elements of chance with ones requiring skill. Additionally, the challenge suggests designing the game to support tournament play in such a way that highly-skilled players will consistently win.

Chapter 1. The Basics

This chapter discusses the definition of game design as well as common terminology and approaches to it used in the field.

Selected quote:
"Game design is one of the most misused terms in use today. Some seek to learn game design, but learn game art instead. Still others learn pure programming. While programming and art are important fields and indeed incredibly important to digital games, game design is its own art form and has been around long before computers, polygons, and even the discovery of electricity."

Chapter 2. Game Design Atoms

The fundamental components of a game are discussed, including mechanics, dynamics, goals, and theme.

Selected quote:
"What really makes the game space a very interesting place to be are game mechanics. "Game mechanic" is another term for what others might commonly call a "rule." Among those in the industry, though, the term "mechanic" is commonplace. Mechanics are how something works. If you do X, then Y happens. If X is true, then you can do Y. In *Monopoly*, if you land on a property, you can buy it."

Chapter 3. Puzzle Design

Basic characteristics of puzzles are outlined and the basic types of puzzles are differentiated.

Selected quote:
"Done poorly, puzzles can reduce or eliminate the fun in the rest of the game just like a traffic jam can ruin a decent drive. A puzzle that player can't solve prevents them from experiencing the game further and causes them even greater frustration, and a puzzle that players see as arbitrary or unfair causes them to hate the game (and its designer)."

Chapter 4. Converting Digital to Physical

The process of converting a digital into a non-digital game and the challenges in doing so are described.

Selected quote:
"As you may have learned, non-digital design is very exposed and tends to reveal bad gameplay mechanics rather quickly. People will have more faith in you, and you'll have more faith in yourself as a game designer, if you can succeed in a non-digital medium, too."

Easily-accessible and fun to read, the book is both appropriate and recommended for designers of all skill levels. New designers will find that exercises are easy to jump into and help foster the creative mindset required for designing games, while veteran designers will find that its challenges force them to think about design in new and at times unusual ways.

Chapter 5. Elements of Chance

The role of chance in games is discussed, including topics such as generation of random numbers, making games depend on chance to varying degrees, and how to use chance to affect the solvability of a game.

Selected quote:
"The essence of most games is the decisions that the players make. In a pure strategy game, players have complete information and know the exact outcome of every move that they make. Since all variables are known, some decisions aren't particularly exciting; if you have the opportunity to capture your opponent's queen in *Chess* for free with no drawbacks, it's not much of an interesting decision because there is a clear 'right answer.'"

Chapter 6. Elements of "Strategic" Skill

The role of skill in games is addressed along with the different types of decisions, the difference between strategy and tactics, and game mechanics which depend on skill.

Selected quote:
"At its heart, a good game is a series of interesting decisions--go right or left, build an offensive or defensive unit, figure out what your unit should do next. The success of decisions--whether a mental or a physical reaction--is a measure of player skill."

Chapter 7. Elements of "Twitch" Skill

The topic of a game's challenge is addressed as well as how to adjust the difficulty of a game, the importance of playtesting in fine-tuning game balance, and the different types of twitch mechanics.

Selected quote:
"Strategic games also have to deal with difficulty progression, but in those games the question is one of depth of decision making, because players typically have all the time they need to consider their options. In twitch games, the problem of overwhelming (or underwhelming) the player with challenge is much more obvious."

Chapter 8. Chance and Skill: Finding the Balance

This chapter discusses how aspects such as target audience should affect the dynamics of chance versus skill in a game.

Selected quote:
"Decisions can be added by replacing automatic rules. For example, in the printed rules of *Monopoly*, the player always rolls the dice and moves forward that many spaces on the board. If this were replaced by a decision (say, "You may choose to pay $50 before rolling and if you do then you roll *three* dice and choose any two for your roll"), then the game gains an actual player decision.

Chapter 9. What Is Intellectual Property?

Intellectual property (IP) is defined and challenges arising from the creation of a game based on an existing IP are explained.

Selected quote:
"If your game is about Disneyland, what will players expect to see and do? How about Wal*Mart or The Marines? Different IPs raise different expectations. These expectations generally hold true whether it's a tycoon game or a massively multiplayer RPG. What actions would the player take in these situations or places, and what possible roles could the player play?"

Chapter 10. Creating Sequels

The different types of sequels and the reasons why they are created are explained.

Selected quote:

"Player expectation factors into every game design. Designers must think through what players will experience, feel, and learn from their game-to-be and figure out exactly what combination of mechanics can deliver that. When players already have a preconceived notion about what the game is and, furthermore, what the game *should be*, it becomes something the team must devote exceptional attention to."

Chapter 11. Targeting a Market

The benefits of studying the target market and reasons why a game designer should do so are explored.

Selected quote:
"Encourage your testers to give feedback by responding positively and not defending your ideas. Nothing can shut down a good feedback session like a developer who defends her ideas, even if they are good ones. Remember, what you hear helps you to refine. It's not a mandate to change things."

Chapter 12. Learning an Unfamiliar Genre

The process behind designing a game around a new genre is discussed.

Selected quote:
"Play a number of games in the genre and compare them. What are the similarities? What are the differences? What are the genre conventions that your players will expect to be there, and what are the superficial similarities that you could get away with changing in the name of innovation?"

Chapter 13. Designing a Game to Tell a Story

The basics of storytelling are explained as well as the types and methods of storytelling in games.

Selected quote:
"Once the story arc is decided upon, some game developers work backward to determine individual plot points, much like puzzle designers sometimes start with the solution and work back from that point."

Chapter 14. Adding and Subtracting Mechanics

Reasons why mechanics are added or removed from a game are discussed and ways to ensure the balance of the game is not disrupted are outlined.

Selected quote:
"Removing a mechanic in a game--particularly a digital game--can have amazingly destabilizing and costly effects. Having spent design, programming, and possibly art time to realize its implementation, making the decision to remove a mechanic doesn't always come easily."

Chapter 15. “But Make It Multiplayer”

Types of multiplayer games and issues faced when designing them are outlined.

Selected quote:
"Designers should consider how the community can be supported, and if there are any means within the game to make player contact meaningful. This includes support for player-created groups (often called "guilds" or "clans"), the ability of players to keep lists of friends online, and special recognition within the game for player community leaders."

Chapter 16. Creating a User Interface

The process of designing a user interface is explained along with basic terminology.

Selected quote:
"Aside from persistent information like the player's health and location, also consider events that happen in the game that the player needs to know about. If a player gets hit and takes damage, he needs to know either through the screen flashing red, a sound playing, the controller vibrating, or a combination of all three."

Chapter 17. Games as Art

Games whose purpose isn't solely to be fun are described along with related interviews and examples.

Selected quote:
"Games are an expressive medium, and a new breed of interactive artist has begun to explore this medium for its artistic potential. At present, artists and developers are only scratching the surface of the tremendous potential that lies underneath. Furthermore, games need not entertain to be considered "a game." They don't even need to be especially fun. Games can say whatever the artist wants them to say."

Chapter 18. Games as a Teaching Tool

Ways of using games to facilitate learning are discussed.

Selected quote:
"For instance, let's say that students are trying to learn the individual states of the United States. As an assignment, task your students with creating a board game that promotes retention of the individual state names and locations. You can even provide an array of existing board games to inspire them."

Chapter 19. Serious Games

The different types of serious games are outlined and the question of why they are created is discussed.

Selected quote:
"Like any other form of art, games are good for more than just pure entertainment. For a moment, think of books. They convey information, educate, persuade, and provide a call to action among other things. Games whose primary purpose goes beyond entertainment are called "serious games," a term the game industry and even serious game makers use with something less than enthusiasm."

Chapter 20. Casual Games

Casual games are defined and the reasons why they are created are outlined.

Selected quote:
"Casual games begin with a two- or three-sentence description of play followed by actual play itself. The mechanics of play are almost always obvious just by looking at the game. In fact, most casual games offer excellent feedback that guides the player as she plays."

Chapter 21. Social Networks and Games

Social network games are defined and discussed along with mechanics of propagating them through social networks and their role in the future of game design.

Selected quote:
"People like to be noticed in real life and in games, too. Having a high-score list present on the page automatically ups the competitiveness of the game. Because of the transparency of social networks, high scores tend to have a more far-reaching effect than they do in traditional console or PC games where, at best, gamer tags are the norm."

The challenges in this book are useful exercises for the beginning student and for experienced designers alike and are easily adaptable to classroom assignments. Concise and fun to read, this book is recommended for anyone with an interest in practical game design.

CRAWFORD, CHRIS. *THE ART OF COMPUTER GAME DESIGN*. BERKELEY, CA: OSBORNE/MCGRAW-HILL, 1984. PRINT.

One of the first books ever published on the subject of game designer, *The Art of Computer Game Design* offers an unusual perspective on game design, having been written in 1984. The book begins by looking at many of the fundamental aspects of games in general, then proceeds to

examine computer games specifically, and how they differ from other types of games. The book continues by analyzing the strengths and weaknesses of computers as a medium for games. This is followed by some insights into the actual process of computer game design, and the book concludes with the story of the development process of one of Crawford's games.

Chapter 1. What is a Game?

This chapter contains a detailed definition of what a game is and the elements that comprise one.

Selected quote:
"First, a game is a closed formal system that subjectively represents a subset of reality."

Chapter 2. Why Do People Play Games?

This chapter is a look at what motivates people to play games and the ways in which game designers can appeal to those motivations.

Selected quote:
"I claim that the fundamental motivation for all game-playing is to learn."

Chapter 3. A Taxonomy of Computer Games

Crawford categorizes games into a number of groups, and then analyses how different types of games have developed in the context of this assessment.

Selected quote:
"A taxonomy reflects the body of material it attempts to organize. The state of computer game design is changing quickly. We would therefore expect the taxonomy presented here to become obsolete or inadequate in a short time."

Chapter 4. The Computer as Game Technology

This chapter examines the ways in which computer games are different than those made for other mediums (such as card or board games), and the ways in which game designers can make use of the strengths of computers.

Selected quote:
"A game that sports huge quantities of static data is not making best use of the strengths of the machine. A game that emphasizes information processing and treats information dynamically is more in tune with the machine."

Chapter 5. The Game Design Sequence

This chapter describes the various steps that typically go into the design and production of a computer game.

Selected quote:
"Programming itself is straightforward and tedious work, requiring attention to detail more than anything else."

Chapter 6. Design Techniques and Ideals

Crawford briefly describes a number ways in he deals with the issues of game balance and learning curves.

Selected quote:
"Although the computer could easily whip the human in games involving computation, sorting, or similar functions, such games would be of little interest to the human player. The computer must play on the human's home turf, something it does with great difficulty. How do we design the game to challenge the human?"

Chapter 7. The Future of Computer Games

Crawford speculates about the future (now the past), and the ways in which computers will affect our lives.

Selected quotes:
"Our lives will be changed by these machines. But we ourselves will not be changed."
"We will see an emphasis on delivering the same game over and over in new clothing. My guess is that we are already caught in the grip of this force, for we are producing little more than variations on a single theme: "blast the monsters!"."

Chapter 8. The Development of *Excalibur*

This chapter takes an in-depth look at the development of the game *Excalibur* and discusses some of the issues that were encountered over the course of the project.

Selected quote:
"I have never designed a game in complete accordance with the system described in Chapter 5. My real designs have followed considerably rockier courses."

This book is an interesting read, but is too dated to be of relevance to game design students of today. That said, many of the general points are still valid and Crawford's predictions concerning both computers and the gaming industry have proven eerily accurate.

CRAWFORD, CHRIS. *CHRIS CRAWFORD ON GAME DESIGN*. INDIANAPOLIS, IN: NEW RIDERS, 2003. PRINT.

Chris Crawford on Game Design provides an analysis of game design and offers many lessons based on his own experiences. The book starts out by looking at what makes games fun; namely, challenge, conflict, and interactivity. It continues by talking about some of the frequently made mistakes in game design. The book advocates a well-rounded education for game designers; Crawford suggests that game designers should go to school, read books, and play games in order to further their skills as a designer. Finally, the book has a large section of examples describing the author's experience with game design, which helps to elaborate upon and drive home the lessons Crawford gives.

Chapter 1. Definitions, Definitions

Crawford gives his own definition of a game, creating a frame of reference for the rest of the book.

Selected quote:
"If the creator's primary goal is to make money, then I call the result entertainment. If the creator's primary goal is to make something that is beautiful, then I call it art. My distinction is crude, I confess, but it works for me. There are lots of other, better definitions of art, but the simple-mindedness of this definition appeals to my simple mind."

Chapter 2. Some Milestone Games

This chapter contains a descriptive list of games that represented significant progress in terms of the evolution of game design.

Selected quote:
"If you want to write novels, you've got to read lots of novels. If you want to make movies, you've got to watch lots of movies. And if you want to design games, you've got to play lots of games."

Chapter 3. Play

This chapter explains what play is and how it pertains to game design.

Selected quotes:

"You can't design games if you don't understand play—and play is a complex and tricky human behavior."

"Good games do not simulate physical reality; they mirror emotional reality."

Chapter 4. Challenge

Crawford discusses what composes different types of challenges in games, why challenge is necessary for a game, and how challenge can best be incorporated into games.

Selected quote:
"The challenges we pursue most eagerly are those that best exercise what is especially human about us."

Chapter 5. Conflict

This chapter examines conflict and its role in games, as well as how it can be used to draw the player into the game.

Selected quote:
"Challenge without conflict is entirely predictable; when you go mano a mano with a crossword puzzle, you know exactly what you're getting into."

Chapter 6. Interactivity

Crawford designates interactivity as the focal point of games. He goes on to talk about what it is, and how it is important to games.

Selected quote:
"The one thing that computers can unquestionably do better than anything else is interactivity. And they do it much, much better than any other medium."

Chapter 7. Creativity: the Missing Ingredient

This chapter is a commentary on the issue of creativity in games and the emerging problem of derivativeness and repetition in game design.

Selected quote:
"Creative productivity is still only half the job—once you have all those great ideas, your next task is to murder most of them."

Chapter 8. Common Mistakes

Crawford describes a number of common mistakes made by game designers and suggests ways in which they can be avoided.

Selected quote:
"Subtraction is just as important an element of good game design as addition."

Chapter 9. The Education of a Game Designer

This chapter contains a description of what Crawford believes is important in the education of a game designer, including school, reading, playing games, and more.

Selected quote:
"If your true interest is primarily in games programming, then the technical school or a program at a computer science department will likely serve you best. If you take this approach, however, you must be under no illusions that you will become a game designer. You will likely become a good games programmer and you might—might—become a game designer if you continue your self-education to make up for the gaps in your education."

Chapter 10. Games I'd Like to Build

Crawford lists some examples of games he would like to make, providing for each game a basic premise and a few design elements.

Selected quote:
"Okay, so most people find all this historical stuff boring; let's jazz it up with a science fiction theme. Sure, there are plenty of space-based Empire clones, but how about one in which ships and news travel at the speed of light rather than infinitely fast?"

Chapter 11. Storytelling

This chapter is a look at different types of storytelling in games as well as the role of each and the problems and benefits inherent in them.

Selected quote:
"Backstory continues to hold its place in games, if only because they do require some sort of dramatic context to explain the events taking place."

Chapter 12. Random Sour Observations

This chapter contains an assortment of complaints Crawford has concerning games and related social issues. Topics include MMOs, input devices, and the habits of large game corporations.

Selected quote:
"One of the most interesting ideas to emerge from bringing the computer to games was the

massively multiplayer game, in which hundreds or thousands of people play together via the Internet. The field is still young, but most of the basic parameters have now been set.

These games are handicapped by what is to me a killer problem: No player can truly play. The games are necessarily egalitarian—we can't have a single player dominating the game or making all the important decisions."

Chapter 13. Tanktics

This chapter describes Crawford's creation of a computer program to play a digital version of the strategic warfare board game, *Blitzkrieg*. This section focuses on the method of breaking a large and difficult problem down into smaller, solvable steps.

Selected quote:
"Thus began the bane of my career as a game designer: graphics versus gameplay."

Chapter 14. Legionnaire

Crawford discusses the creation of *Legionnaire*, which used *Tanktics* as a starting point. This story illustrates how good ideas do not necessarily make a good game if they do not fit together well.

Selected quote:
"Never build a technology and then go looking for a game to fit it."

Chapter 15. Wizard

Crawford talks about building a top-down shooter for the Atari VCS and how despite being a good game for the time, it was not released due to marketing decisions.

Selected quote:
"I hope that you're properly impressed with just how hard it was to design games back in those days. Did I mention that we had to walk twelve miles through the snow to get to work each morning?"

Chapter 16. Energy Czar

Crawford describes his work on an educational pollution management simulator and how it impressed upon him the importance of user friendliness.

Selected quote:

"Programmers seem to feel that, having laid down the rules and regulations of the program, they have satisfied their responsibilities; any user too lazy to read and obey those rules and regulations deserves everything he gets."

Chapter 17. Scram

Crawford talks about the production of a nuclear power plant simulator and the mistake he made in focusing on the game's visuals rather than its mechanics.

Selected quote:
"Design your games as play experiences, not visual experiences."

Chapter 18. Eastern Front (1941)

Crawford takes an in depth look at the creation of his wargame, which featured a scrolling map and a clever AI which worked from the perspective of individual units. The story emphasizes the importance of playtesting.

Selected quote:
"Most suggestions are additions; some are embellishments, some are corrections, and some are consolidations. The additions are new features; those I dumped instantly. You don't add new features to a game during playtesting."

Chapter 19. Gossip

Crawford describes how *Gossip*, the first game centered directly on interaction between people, was created.

Selected quote:
"You acquire things, expend things, utilize things, shoot at things, but it's always things, things, THINGS! There are never any real people in our games!"

Chapter 20. *Excalibur*

Crawford talks about the creation of *Excalibur*, which featured a political component as well as both strategic and tactical combat. He describes it as one of the first "symphonic" games, which required the player to think on multiple levels at once, rather than focusing on small, specific problems.

Selected quote:
"Most games feel rather like rock songs: a simple melody, some harmony, and a great, pounding, primitive beat. As games have grown larger and more complex, most have simply grown obese, like some ghastly imaginary rock song that goes on and on repetitively for two hours. The same

chords, the same melody, the same beat, all pound away at the player with machine-like repetitiveness. A better way to grow a game is to build it like a symphony with several movements, each different melodically, yet conceptually integrated. Many thousands of great songs have been written, but the list of great symphonies has only a few score entries, because that magical symphonic quality is so much harder to attain."

Chapter 21. *Balance of Power*

Crawford describes how rather than continue working on war games, he chose to make a game centered around international political interaction in which the player's goal is to avoid war breaking out.

Selected quote:
"So my task was to design a game that was full of conflict, but lacked war. This is not so difficult a challenge as it might seem at first. As von Clausewitz noted in On War, "War is the extension of policy to other means." In other words, it is an extension of geopolitical conflict, not the first manifestation of it. War arises when conflicts between nations cross the line from peaceful into violent expression. Hence, there can be plenty of conflict in an unwar game—it's just not violent conflict."

Chapter 22. Patton Versus Rommel

This chapter contains a story about Crawford's less than satisfying interaction with Electronic Arts with regard to his next war game.

Selected quote:
"Publishers hold all the cards; designers are lucky to get whatever they can."

Chapter 23. *Siboot*

Crawford talks about the creation of *Siboot*, which featured an inverse parser that allowed the player to effectively communicate with the game's NPCs.

Selected quote:
"If all you want to do is screw around with code, you might create some great programs, but you'll never design a good game."

Chapter 24. *Guns & Butter*

Crawford describes the creation of a strategic wargame in which the player must balance prioritization of resources between economic and military development. Despite many good ideas and innovations, the game lacked polish and did not form a cohesive whole and was ultimately regarded as a poor game.

Selected quote:
"No matter what the schedule says, give the game enough time to get it right."

Chapter 25. *Balance of the Planet*

Crawford talks about the creation of an environmental game which was praised by educators and environmentalists for its design, but was nearly a failure because it didn't appeal to most audiences.

Selected quote:
"Balancing large mathematical systems is one of the killer problems in game design. Every game has plenty of interacting subsystems; all too often some unforeseen interplay between two such subsystems can result in psychotic behavior from the system as a whole."

Chapter 26. *Patton Strikes Back*

Crawford tells the story of how he made a sequel to *Patton Versus Rommel* and how his game managed to avoid being cracked by pirates.

Selected quote:
"Defeat crackers with psychology, not technology."

Chapter 27. Themes and Lessons

Crawford summarizes a number of lessons learned from making the previously described games, such as the importance of in-game help.

Selected quote:
"The narrowness of the range of games exercised me; it didn't take much deep thinking to comprehend that the underlying problem was the absence of human factors."

Chapter 28. Old Fart Stories

Crawford relates a number of short game and industry-related stories.

Selected quote:
"If you don't fail at least 90 percent of the time, you're not aiming high enough."

The informal and conversational tone of the book makes it easily approachable by readers. The examples are drawn from all areas of games, covering everything from *Space Invaders* to *Diplomacy* to *Warcraft*. If one criticism can be made of these examples, it is that they are slightly dated. On the other hand, they are still quite relevant and do a good job of illustrating the points Crawford is trying to make.

Chris Crawford on Game Design has little to no content relating to the nuts and bolts of making games, but rather focuses on the basic elements of game design. On the whole, it serves as a good supplemental book for a fledgling game designer's education.

DeMaria, Rusel and Perry, David. *David Perry on Game Design: A Brainstorming Toolbox*. Boston, MA: Cengage Learning, 2009. Print.

David Perry on Game Design approaches the topic of game design by highlighting the elements that constitute a game from a high level and presenting lists of examples. A large portion of the book's content is comprised of these lists, including two entire chapters devoted to listing different kinds of weapons and armor.

Chapter 1. Using This Book as a Reference

The author briefly discusses the purpose of the book and its intended role in the design process.

Selected quote:
"The goal was always to provide a tool to encourage designers and to assist anyone connected with a game project. My vision was that this book would accompany you to design meetings and brainstorming sessions, and that everyone on the team would have access to a fund of ideas and possibilities."

Chapter 2. Brainstorming and Research

This chapter discusses brainstorming tips and techniques and how the process can be useful to designers. It includes a list of brainstorming exercises and several lists of ideas that might be generated from brainstorming sessions.

Selected quote:
"Some brainstorming techniques suggest that participants periodically engage in silent times of reflection, notating their ideas without speaking—even to the point of writing down their best guess about the ideas other participants might be having. Though this may seem odd, it actually opens up the creative process even more by having the participants get outside their own concepts and ideas and attribute an idea to someone else."

Chapter 3. Hooks

The author discusses the concept of a hook and its role in the pitching process.

Selected quote:
"If you really want to get a game published, you will nearly always need a hook. Games are going to get more and more difficult to pitch for funding in the long term, and you need a way to differentiate your designs from all others. However, I must caution that hook does not have to mean risk in the eyes of a publisher, but certain hooks will mean just that. So always consider who you are going to be pitching this to."

Chapter 4. What Publishers Want

In this section, the author discusses the importance of a pitch, how to write one, and how they are important in the process of finding a publisher.

Selected quote:
"Having a great idea is only the beginning. To get a publisher to develop your idea, you have to bring a lot to the table. All publishers are working with companies and teams they know well. You have to convince them not only that your idea stands out from the crowd, but that you have done your homework and you can bring a strong team to the table. This section looks at what you can do to help ensure that you will be taken seriously."

Chapter 5. Game POV and Game Genres

This chapter is nothing more than a list of different points of view and genres.

Selected quote:
"Most commercial games today are made using 3D technology, even if they use a 2D point of view. The reason is that it's just easier and quicker to model objects and environments using today's 3D tools. In essence, then, a 2D game created with 3D tools is like having a 3D game with a fixed dolly camera. It is entirely possible to create good games with 2D perspectives, but they will probably be created with 3D tools."

Chapter 6. Business Models

Another pointless list chapter, this one lists different monetization models used in games.

Selected quote:
"Gamers love free stuff, and developers love to make their gamers happy. Why not do so, and at the same time make some bucks? The idea is to get an advertiser to sponsor free items for your players. This can be done in a variety of ways. For instance, a specific item might be won in a contest, and when the player receives it, he also receives a message saying, "This item was provided to you by XYZ Company.""

Chapter 7. Branding

This chapter discusses different topics associated with game branding and developing a marketable identity for a game.

Selected quote:
"To test the brand-power theory, I once went to a game store and just stood there and watched the activity of buyers. It was really interesting to see the kids' wandering around the shelves, and, as if little magnets were hidden in the boxes, their hands were attracted to the known brands first."

Chapter 8. Protecting Your Intellectual Property

The author briefly discusses trade secrets, copyright, and trademarks.

Selected quote:
"Most companies require you to sign a document before pitching a game that, in essence, states that the company may have something substantially similar already in production, and therefore they cannot be held liable if a game is released that is similar to what you are pitching. If you think the situation is otherwise, you would probably need to consult a lawyer."

Chapter 9. Storytelling Techniques

The author lists common elements in stories and techniques for developing game stories.

Selected quote:
"The opening line of a story, book, or play is always significant. The opening scene of a movie can set a tone and intrigue the audience. Likewise, the beginning of a game can be used to draw in players, establish the story or current situation, familiarize the player with the game's controls and systems, introduce some of the main actors, and/or set a mood or tone that will establish the pace of the game."

Chapter 10. Movie Genres

Just as the title suggests, this chapter is nothing but a list of different movie genres.

Selected quote:
"One way to look at this book is to think of movie genres as key words or concepts. There is a wealth of ideas contained in the history of movies, and you can use the many movie styles available as inspiration. As always, these lists are just a beginning, but imagine how useful they'd become if you were to mix the concepts—for example, if you mix "martial arts" with "buddy movie." You come up with something like *Rush Hour*."

Chapter 11. Scenarios

This chapter lists ideas for minor stories or conflicts in a game.

Selected quote:
"This chapter lists many common (and some less common) types of scenarios, along with some variations and refinements. Some are just keywords, such as birth, that are intended to trigger a scenario in your head. Armed with this list, you should be able to come up with all kinds of ideas for plot elements for your games."

Chapter 12. Character Design

This chapter suggests traits to consider when designing a character. The author proposes a method of designing characters, but the process described here is largely common sense.

Selected quote:
"Every character has some goals, regardless of whether they are shown or implemented. Even random NPCs walking down the street presumably have the goal of getting somewhere (although in reality they will never actually get anywhere unless the programmers gave them a destination). Or the typical shopkeeper in a game presumably has the goal of buying low and selling high. But in reality, most game shopkeepers have no real depth or intelligence. They are basically vending machines."

Chapter 13. Character Roles and Jobs

Another list chapter, this one lists different roles a character might play in a story.

Selected quote:
"Character roles have nothing to do with their skills, training, or professions, but with their relationship to the player's character and the story as a whole."

Chapter 14. Enemies

This chapter discusses the role of enemies in a game.

Selected quote:
"Bosses in games often tend to be more like comic book villains than the more complex characters from literature or even good films. They tend to be simplistic, driven by a single drive for power, greed, or revenge, and are rarely shown in any detail during the course of the game. They are almost always power-mad megalomaniacs."

Chapter 15. Character Abilities

This chapter lists abilities that a character might have.

"Every person has abilities. Some are natural, such as our five senses and abilities granted to us by our skeletal and muscular systems. Some may be learned or developed during the course of our lifetime. At any rate, we have a lot of natural abilities. But games often deal with larger-than-life characters, and these characters may have a range of abilities that far exceeds what we consider normal."

Chapter 16. Speech

This section discusses topics related to writing dialogue but comes across as verbose, disorganized, and without any applicable advice.

Selected quote:
"Dialog works very well in some games and not at all in others. It tends to slow down the action and become repetitive, and, if not very well written, it can be boring or annoying. Some players have the patience to enjoy well-written dialog, however, while others do not."

Chapter 17. Game Worlds

This chapter lists topics related to developing an interesting setting.

Selected quote:
"Determining the rules that govern a world is one of the most important jobs, because the rules will determine behavior and gameplay."

Chapter 18. Travel

This chapter describes the role travelling plays in a game and why some games require it while others do not.

Selected quote:
"What happens when there are vehicles on the roads? What do NPCs do under different circumstances? Although it's not a big part of the game, to add to realism, consider how your non-player characters might respond when dealing with traffic and other common elements of street travel. It's a small bit of extra coding, but it could have a big effect on the player's sense of being in a "real" place."

Chapter 19. Objects and Locations

Yet another list chapter, this one lists attributes of items and objects.

Selected quote:
""A rose by any other name would smell as sweet," they say. To Sigmund Freud, "a cigar is just a cigar." However, objects do obtain special meaning based on our emotional responses to them or special meanings we give to them. In essence, they become symbols."

Chapter 20. Music and Sound

This chapter discusses some considerations related to audio, but most of what it discusses is common sense and unhelpful.

Selected quote:
"One way to look at almost any music is to imagine it as a combination of pace, intensity, and mood or style. These qualities are often intuitive to the composer, and it can be revealing to look at how these elements combine in different types of music."

Chapter 21. Experiential Design

This chapter discusses activities, such as quests, a player can perform in a game.

Selected quote:
"As a game designer, one of the interesting challenges, however, is to consider how you might

be able use some of these actions in games where you might not expect to find them."

Chapter 22. Game Conventions and Clichés

This chapter lists common tropes in games, many of which are not, as the chapter title might suggest, clichés (e.g., the presence of a life bar in fighting games and player interaction in MMOs).

Selected quote:
"Some of the examples I offer in the following sections might be considered conventional approaches to specific in-game situations and structures. As such, you could argue that they are not really clichés. Take it as you like it. I've included them, and I encourage you to decide for yourself whether they are clichés."

Chapter 23. Goals

This chapter lists possible objectives for a player in a game. No context is provided, making the chapter a random assortment of quest ideas.

Selected quote:
"In some cases, the ultimate outcome of the game is determined to a greater or lesser extent by the decisions you, as the player, make. A good example is *Fable*, in which you can choose a good or an evil path or one somewhere in between. The ultimate outcome of the game varies somewhat based on these choices."

Chapter 24. Rewards, Bonuses, and Penalties

This chapter discusses ways to reward a player for completing a challenge.

Selected quote:
"One parameter of rewards is whether they are known or unknown. For instance, in many games, you may recognize that an object is a pick-up or power-up, but you won't know what the item it contains is until you actually acquire it. In other cases, each specific item you see in the environment is clearly identifiable, such that a health potion, for instance, always looks like a health potion."

Chapter 25. Barriers, Obstacles, and Detectors

This chapter lists different ways to impede the player's progress.

Selected quote:
"Games generally impose limits on a player—how high can you jump or how fast can you run, for instance. Games also generally impose limits on a player's movement within the game environment, but if the limits are believable, they enhance the sense of reality of the game."

Chapter 26. Traps and Counter Traps

This section lists various kinds of pitfalls and ways to overcome them.

Selected quote:
"While trapping someone (the player or another character) is one of the primary design problems you may encounter in creating a game, ways to escape or counter the trap are just as necessary, especially for the player character, who must ultimately be able to escape."

Chapter 27. Puzzles

This chapter, the third consecutive list chapter, lists elements common in puzzles.

Selected quote:
"Although puzzles represent challenges, some challenges are not puzzles. Some challenges, such as having to fight an enemy who blocks your way, are not really puzzles…unless the enemy has some secret that you must uncover in order to beat him."

Chapter 28. Controlling Pacing

This chapter highlights how different game genres control the rate of the game's progression.

Selected quote:
"I once heard it described that humans like to guess things subliminally, meaning they get a "feeling" when the next action sequence or reward will be coming up. They are more than happy to wait until then, as long as they are right a reasonable amount of the time."

Chapter 29. Time Limits and Time Manipulation

This chapter discusses ways of challenging the player involving time limits.

Selected quote:
"When you manipulate time in a game, you may be altering the action, or you may be altering the story. In any case, you are introducing an element that takes the player's experience out of the ordinary and into the extraordinary."

Chapter 30. Ways to Communicate with the Player

This chapter outlines methods of conveying information to the player, both explicitly and implicitly.

Selected quote:
"Rules are part of the information a player needs to play a game, but they are a specific type of

information—the core framework that determines how a player interacts with the game."

Chapter 31. Common Game Design Problems

This chapter discusses common challenges involved in designing a game.

Selected quote:
"How can games trigger emotions such as surprise, fear, sadness, anger, frustration, shame, and humiliation? Players' emotions are always involved in game playing to some extent. The very act of attempting to meet the challenges of a game implies some emotion, although people respond with different levels of intensity to games. Still, games inherently inspire frustration and feelings of triumph. Often, they can even inspire anxiety and determination in players."

Chapter 32. Ways to Die

This chapter lists ways to kill the player.

Selected quote:
"One main tool of mental torture is fear. Playing on people's fears and beliefs can cause a breakdown in a person's resistance."

Chapter 33. Historical and Cultural Weapons

This chapter lists historical weapons and armor.

Selected quote:
"Although not every game requires weapons, it's hard to imagine the game industry without a healthy dose of good armament."

Chapter 34. Standard Modern Weaponry and Armor

This chapter lists modern weapons and armor.

Selected quote:
"Even marketing and advertising could arguably be considered in the realm of information warfare's tenet of perception management, as they attempt to create demand for products and services where there is little or none naturally."

This is another example of a book that chooses to describe instead of to explain and is little more than a text dump of assorted topics related to game design. As a result of its constant statement of the obvious and long-winded, aimless babbling, this wordy and superficial book is of little use even to novice designers.

FULLERTON, TRACY, CHRISTOPHER SWAIN, AND STEVEN HOFFMAN. *GAME DESIGN WORKSHOP: A PLAYCENTRIC APPROACH TO CREATING INNOVATIVE GAMES*. AMSTERDAM: ELSEVIER MORGAN KAUFMANN, 2008. PRINT.

Game Design Workshop examines the process of producing a game with a large focus on how each part affects the player's experience. It begins by looking at exactly what game designers do and then breaks games down into their basic components. The book then covers the actual process of creating a game, first in general, and then in context of the modern game industry. The book concludes with a summary of the game industry and advice on how to break into it.

Chapter 1. The Role of the Game Designer

This chapter describes the role of a game designer in terms of the player's experience and lists traits that are necessary to be a good game designer. The author also advocates and describes the iterative design process.

Selected quote:
"Learning how to set interesting and engaging player goals means getting inside the heads of players, not focusing on the features of the game as you intend to design it."

Chapter 2. The Structure of Games

This chapter describes different components of games and how they relate to the player's experience.

Selected quote:
"A card game has a very different format than a board game; a 3D action game is not at all the same as a trivia game. There is something, however, that they must all share because we clearly recognize them all as games."

Chapter 3. Working with Formal Elements

This chapter discusses the relationships between players, and the relationships between players and the game. The chapter also talks about many of the elements that make up a player's experience in a game and how they exist within the game itself.

Selected quote:
"Conflict emerges from the players trying to accomplish the goals of the game within its rules and boundaries."

Chapter 4. Working with Dramatic Elements

This chapter examines the emotional and narrative elements that make up a game and how they can work to deepen player immersion.

Selected quote:

"Meaningful conflict is not only designed to keep players from accomplishing their goals too easily, but it also draws players into the game emotionally by creating a sense of tension as to the outcome."

Chapter 5. Working with System Dynamics

This chapter provides a look at the underlying mechanics and structures of games and how they can be analyzed to provide a game with flow and balance.

Selected quote:
"The only way to fully understand a system is to study it as a whole, and that means putting it in motion."

Chapter 6. Conceptualization

This chapter contains a description of ways to generate, evaluate, and process game ideas to create systems of game elements which can be refined into the design of a game.

Selected quote:
"Many of the greatest designs come about through tireless experimentation."

Chapter 7. Prototyping

This chapter contains an exposition of both benefits and methods of producing physical prototypes with which to test and refine a game's design.

Selected quote:
"When you are making a prototype, you do not need to be concerned with perfecting how it looks or whether the technology is optimized. All you need to worry about are fundamental mechanics, and if these mechanics can sustain the interest of playtesters, then you know that your design is solid."

Chapter 8. Digital Prototyping

This chapter contains a description of the process of digital prototyping and how it can be used to further refine a game before production begins in full.

Selected quote:
"Prototyping is not about software engineering. It is an opportunity to try out ideas in a quick and dirty fashion."

Chapter 9. Playtesting

This chapter discusses how one can gather data from playtesting throughout the design process and make use of it to improve a game.

Selected quote:
"Playtesting is not when the designer and her team play the game and talk about the features. That is called an internal design review."

Chapter 10. Functionality, Completeness and Balance

This chapter describes the various stages of implementing a game, and how one can decide at what point a game should be considered complete. Also discusses the issue of game balance, and ways in which one can make their game more balanced.

Selected quote:
"If players argue about rules or reach a dead end, your game is not complete. Revise your game to deal with the issues you find and test again."

Chapter 11. Fun and Accessibility

This chapter contains an analysis of what make a game fun for its players, and advice on some ways to make a game more fun, as well as some advice on things to avoid. A lot of focus is given to the importance of good playtesting.

Selected quote:
"How can you tell if your game is fun? By this time you should know the answer: Ask the playtesters."

Chapter 12. Team Structures

This chapter contains a look at the roles and interactions of individuals in the game industry and how they work together on both the developer's and the publisher's teams.

Selected quote:
"Understanding your role in a team and having the interpersonal skills to work within a team structure are as important as any of the design skills we have discussed to this point."

Chapter 13. Stages of Development

This chapter overviews the stages of a game's production from concept to release and examines the process of planning and scheduling a game's development.

Selected quote:
"As the process moves along, ideas must become more focused, and smaller and smaller changes can be made to the design without disrupting the production."

Chapter 14. The Design Document

An explanation of how to write a game design document, as well as what it should contain and what questions it should answer.

Selected quote:
"Always keep in mind that you are not writing the design document for the sake of writing it – your objective is communication, so do whatever it takes to accomplish that goal."

Chapter 15. Understanding the Game Industry

A basic overview of the game industry as it is today, with a lot of focus on different markets, descriptions of major publishers, and a description of the process of publishing a game.

Selected quote:
"As in all things, knowledge is power, and the more you know and understand about the industry you work in, the better equipped you will be to deal with the ups and downs of getting your original game ideas produced and published."

Chapter 16. Selling Yourself and Your Ideas to the Game Industry

This chapter contains a collection of suggestions for how to go about breaking into the game industry. It also has advice on how to pitch a game idea, and how to prepare to do so.

Selected quote:
"Most game designers do not start out by selling original concepts; they get a job at an established company and work their way up the ladder."

As a whole, *Game Design Workshop* describes the process of design with a focus on the player's experience and emphasizes the importance of playtesting throughout the development process in order to understand the game from the player's perspective. It is also noteworthy that it advocates the unusual use of physical prototypes of digital games. One criticism is that the book seems at many points to be overly formulaic in its approach. That said, *Game Design Workshop* does a good job of reconciling its ideal process of game development with the less pleasant reality of the game industry. Also of note are the interviews with experienced developers that are interspersed with the rest of the book. It would function quite well as an introductory book to game development.

PEDERSEN, ROGER E. *GAME DESIGN FOUNDATIONS*. SUDBURY, MA: WORDWARE PUB., 2009. PRINT.

Game Design Foundations takes a document-based approach to game design. It goes through the process of designing a game step-by-step, and looks at what sort of documentation should be used to communicate the designer's ideas to the rest of the team at each step. There are exercises for the reader at the end of each chapter and the book contains a wealth of examples.

Chapter 1. The Game Designer

The first chapter starts by pointing out that game designers are people who design games rather than implement them. However, roughly half its pages contain salary data and descriptions of existing IP.

Selected quote:
"You are the creator, the life giver, and the visionary of your game."

Chapter 2. The "Pederson Principles"

This chapter contains a set of 11 principles that provide advice and insight about the game industry, as well as user feedback to earlier publishing of the principles.

Selected quote:
"Gathering information throughout the development cycle and knowing what to do with it is the trait of a great designer and producer.

Designers should research their subject matter and evaluate outside suggestions and opinions. Their audience demands and expects films and books to seem realistic and accurate. The computer and video game audience should accept nothing less."

Chapter 3. Game Genres

This chapter is evenly divided between descriptions of various game genres and lists of games that fall into those genres.

Selected quote:
"Adventure games are quests where puzzles are presented along the journey."

Chapter 4. Game Concepts and Ideas

This chapter begins with a rough description of what a game is, which is followed by a long list of 1 or 2 word game ideas, and is concluded with advice for deriving game ideas from other forms of art.

Selected quote:
"When obtaining game ideas from a film we want to utilize the film's premise and not its character names, costumes, creature design and look, or names of places and objects."

Chapter 5. The Game Design Process

Pederson starts by suggesting a design process based on written documentation, starting with a one-page concept description. The majority of the chapter is composed of examples of these one-page documents.

Selected quote:

"The One Pager explains and sells your game's concept to publishers and developers and puts your ideas and vision into a concise document."

Chapter 6. Game Research

This chapter contains advice for how to research real life and Licensed Properties in order to make a game more realistic, as well as a long set of examples of what such research might include.

Selected quote:
"A good start to understanding and researching items that your game concept needs is to make a list of similar and competing games."

Chapter 7. Innovation in Gaming

This chapter discusses innovation in gaming which is not just about the games themselves, but also how they are presented to the player.

Selected quote:
"The innovation of Second Life is in its community, where over 4.1 million players can interact with each other, and its ability to sell virtual property."

Chapter 8. Game Design Documents

This chapter talks about how to expand a one page concept document into a longer Game Proposal, which covers a basic summary of the game and its plot, gameplay, audience, and features. It also talks about the composition of a development team, and how to interact with publishers. Finally, there are two example documents of the type described.

Selected quote:
"Since many publishers are actively seeking new properties, a hot Internet game concept discussion can capture press and publisher interest."

Chapter 9. Game Design Principles

This chapter explains the basics of game mechanics, game balance, and AI and also talks about the importance of modular design.

Selected quote:
"The game designer who knows and understands the game mechanics from popular games can borrow and implement them in his own games."

Chapter 10. Knowing the Entire Team

This chapter describes the roles of many different individuals who may contribute to a game as part of its development team.

Selected quote:
"The game development team members include game designers, producers, programmers, artists, audio engineers, composers, and QA testers, plus external team members such as writers, actors, and translators."

Chapter 11. Game Narrative Scriptwriting

This chapter contains an explanation of several story structures that might be used in a game, with some advice drawn from the film industry.

Selected quote:
"I've heard it said – and I agree – that technology is a tool and not the basis for designing a great game. Stories, character development, interesting puzzles, and interaction make great games.

Chapter 12. Character Design Document

This chapter lays out a method for creating brief descriptions of game characters which help other team members to visualize and understand them. It also includes over 20 pages of sample character descriptions.

Selected quote:
"The character descriptions include the character's birthday, right- or left-handed, astrological sign, height, eye color, hair color, and city that they were born in, as well as facts about themselves."

Chapter 13. Basics of Programming and Level Scripting

This chapter explains the basics of programming and scripting, which tries to make the topics understandable to the reader. Included in the chapter is sample code and program flowcharts.

Selected quote:
"You tell a dumb machine that can only do a few things, such as add one plus one, to answer the question "does one equal one?" Simplistic? Yes. Realistic? Yes."

Chapter 14. Game Design Outlets

This chapter contains an overview of many major publishers as well as descriptions of different game markets that exist today.

Selected quote:
"There is an entire retrogaming market of players who own old systems such as the Atari 2600."

Chapter 15. The Game Design Document

This chapter starts with a brief description of what a game design document should contain, and follows with a sample design document.

Selected quote:
"The Game Design Document is the designer's entire vision spelled out in detail, which includes all of the storyline, character dialogue, world maps, city views, and detailed room specifications such as sample wallpaper, artwork, and rug designs."

This book is heavier on communication than it is on actual design. Its sections on game design advocates borrowed and derivative ideas while its sections on documentation give an extensively described, formulaic method for conveying one's thoughts.

The exercises provided to the reader after each chapter give a reasonable review of the content. A criticism to note is that a large portion of the book is padded with examples. Overall, this book would probably be best for a game design student looking to understand the level and kind of documentation that is expected in the game industry.

RABIN, STEVE. *INTRODUCTION TO GAME DEVELOPMENT*. BOSTON: CHARLES RIVER MEDIA, 2010. PRINT.

Introduction to Game Development attempts to cover every facet of game development, including programming, art, and business. It covers a broad spectrum of topics, including artificial intelligence, audio, and intellectual property, but only devotes a single chapter to the study of game design. As such, the book has little to offer for design students. In fact, the book has little to offer for anyone; the target audience is unclear, since most of the topics covered are too advanced for beginners to understand but too basic for anyone with any real experience to use.

Chapter 1.1. A Brief History of Video Games

This chapter briefly outlines the history of the industry.

Selected quote:
"Innovation doesn't necessarily lead to success, and success doesn't necessarily lead to longevity."

Chapter 1.2. Games and Society

This chapter discusses the role and impact of games on society.

Selected quote:
"Ultimately, the evolution and sophistication of games has led to a point where the communities that spring up within and around games act as a microcosm for the larger society."

Chapter 2.1. Game Design

This chapter briefly highlights high-level concepts related to game design, including mechanics, interface, prototyping, and playtesting.

Selected quote:
"Something happens, along the way, where it becomes difficult not to relate just about everything you learn to game design; this is a diverse and expressive art."

Chapter 2.2. Game Writing and Interactive Storytelling

This chapter highlights topics related to stories in games and how there is an increasing demand for interactivity in game-based narrative.

Selected quote:
"As more games begin to incorporate stories and genres continue to merge, the challenges will increase. That is why it is of the utmost importance for game writers to be aware of the target audience for the game, as well as the funding and game engine limitations in order to keep their writing within the scope of the project."

Chapter 3.1. Teams and Processes

This chapter discusses the importance of working in teams and techniques which facilitate the coordination of group project work.

Selected quote:
"Having a team with diverse levels of experience and different personality types can present some management challenges, but with the right management, a diverse team can accomplish truly outstanding results."

Chapter 3.2. C++, Java, and Scripting Languages

This chapter discusses programming languages which are well-used in the industry and highlights their differences.

Selected quote:
"You should always choose the right tool for the job, and a programming language is just that, a tool. Apart from a few physical limitations, you can almost get the job done with any language you want."

Chapter 3.3. Programming Fundamentals

This chapter briefly discusses a number of broad topics related to programming, such as object-oriented programming, network communication, and inheritance. Like the other chapters on programming, most programmers will find the concepts discussed too elementary to be of use and non-programmers will find them too technical to understand, making it questionably useful.

Selected quote:
"Being familiar with the basics of object-oriented programming is not enough. It is important to apply it correctly and know when to choose a class inheritance hierarchy and when to use composition. Correctly identifying and using design patterns will also lead to faster development and a clearer architecture."

Chapter 3.4. Game Architecture

This chapter discusses the programmatic structure of a game, including topics like game loops, input, and optimization.

Selected quote:
"As projects grow in size and complexity, carefully considering the architecture of a game code base is becoming increasingly important, especially if you plan to reuse some of the code in future projects."

Chapter 3.5. Memory and I/O Systems

This chapter discusses the basics of memory management and file saving/serialization. It points out issues such as fragmentation and memory leaks that most programmers will already be well-acquainted with (likely from experience).

Selected quote:
"An important observation is that any resources that will be needed in the middle of the game are going to be requested by entities that are already in the level. For example, a barrel containing flammable gases knows that if it explodes, it will need to play certain explosions. A spawn point knows that it might need to create new ores if triggered. Or a player avatar knows about all possible weapons it can cycle through. The cleanest way of dealing with precaching is to simply allow every entity a chance to precache anything it will need to use later. The entity doesn't need to hold on to the resource, it simply needs to tell the system to keep it around in case we use it later. The game can keep a list of all the precached resources for the level, which, if we use reference counting, will also keep the reference count positive, so we know they won't be destroyed before the end of the level."

Chapter 3.6. Debugging Games

This chapter discusses steps to take in order to isolate, identify, and fix bugs in games.

Selected quote:
"Sometimes, systems interact with each other in ways that complicate debugging. Try to minimize this interaction by disabling subsystems that you believe are not related to the problem (e.g., disable the sound system). Sometimes, this will help identify the problem since the cause might be in the system that you disable, thus indicating that you should look there next."

Chapter 4.1. Mathematical Concepts

This chapter covers mathematic topics such as trigonometry, matrices, and geometry and how they apply to game programming. Like the other programming chapters, it has no new information for programmers in spite of being clearly written for a programmer audience, making it unapproachable to other readers.

Selected quote:
"Games nearly always need to provide some kind of virtual environment in which all of the action occurs. This environment and the objects that interact with it are represented inside the computer as geometrical structures. Game engines invariably need to be able to mathematically manipulate these structures as well as create additional geometrical objects during gameplay."

Chapter 4.2. Collision Detection and Resolution

This chapter discusses efficient ways of detecting collisions between geometry.

Selected quote:
"Collision detection will determine if and when two objects collide. Since it is not enough to merely detect the collision, collision resolution will figure out where each object should be once a collision is detected. Effectively, collision detection and resolution together will make objects solid so that they will never pass through each other."

Chapter 4.3. Real-Time Game Physics

This chapter discusses the basics of physics engines in games.

Selected quote:
"Consider two colliding particles, 1 and 2. For the duration of the collision, each particle exerts a force on the other. The duration of most collisions is an extremely short period of time, and yet the change in velocity of the objects is often dramatic. (For example, think about the collision response of those billiard balls.) Large, nearly instantaneous changes in velocity can only occur if the collision forces are large. Collision forces are often so large that they dominate over other forces during the collision.
When this is true, it is acceptable to ignore other forces entirely, assuming their effect is negligible for the short duration of the collision."

Chapter 5.1. Graphics

This chapter discusses topics related to 3D graphics, including primitives, textures, and lighting.

Selected quote:
"In most games, the rendering engine is a large module taking most of the memory and processing power of the system, and as such will have only a few specialized programmers who truly know how it works and what the performance characteristics are."

Chapter 5.2. Character Animation

This chapter discusses topics related to the animation of 3D meshes, including deformations, playing and blending animations, and inverse kinematics.

Selected quote:
"Animations are encoded using a variety of compression methods, primarily to reduce the memory footprint, but also to support playing and sampling them in real time, while blending them together in various ways."

Chapter 5.3. Artificial Intelligence: Agents, Architecture, and Techniques

This chapter discusses the basics of artificial intelligence and finite state machines.

Selected quote:
"The AI must be intelligent, yet purposely flawed."

Chapter 5.4. Artificial Intelligence: Pathfinding Overview

This chapter discusses the basics of pathfinding, touching on Breadth-First, Best-First, Dijkstra, and A* algorithms. Though these are all useful algorithms, they are presented without context; the chapter provides little that a Wikipedia search on the topic would not also provide.

Selected quote:
"Performing searches on massive levels or multiple searches simultaneously can be very expensive. Hierarchical path planning and preplanning are two approaches of dealing with these situations. Hierarchical path planning uses multiple representations, each at a different level of detail. Paths are first resolved on the lower resolution layer and the details are then worked out on the higher resolution layers."

Chapter 5.5. Audio Programming

This chapter discusses the basics of audio programming, covering basic terminology and industry standards.

Selected quote:
"To measure absolute sound volume, a standard pressure (20 micropascal) has been defined as the approximate quietest average sound a human can hear transmitted through the air. All other human-audible sounds are compared against this measurement, resulting in an absolute scale. When decibels are used to describe a sound in terms of its perceived loudness, it is likely that this is the scale against which it is being measured. However, in audio programming, we're typically much more interested
in relative sound volumes. After all, the player ultimately has the final control over the volume of the audio being rendered."

Chapter 5.6. Networking and Multiplayer

This chapter discusses the basics of networking, covering the basics of the OSI protocol stack and security. Little more than basic terminology is covered. Although the chapter has little useful information to offer, it does conclude by outlining what an actually useful text on the topic would cover.

Selected quote:
"No single book covers all the technical details of multiplayer development. Complete coverage would entail a discussion of all the dirty details on numerous platforms on the following subjects: serial communication, server design, network gear and infrastructure, socket programming, voice-over IP (VOIP), tools of the trade, unit and beta testing, available middleware analysis, database development, Web development, asynchronous programming, and much greater depth in latency hiding/recovery for every game genre."

Chapter 6.1. Visual Design

This chapter covers the very basics of graphic design for games, including elementary color theory and principles of user interface design.

Selected quote:
"Visual design can be described as the management and presentation of visual information. It encompasses many forms of communication in both the two-dimensional and three-dimensional realms."

Chapter 6.2. 3D Modeling

This chapter covers basic considerations in 3D modeling for games, including a hard-to-follow tutorial on low polygon character modeling.

Selected quote:
"Three-dimensional modeling is both a technical and artistic endeavor. As you become more familiar with the tools, processes, and methods of creating models, the technical side will become second nature, and you can focus your attention on the much more important artistic side."

Chapter 6.3. 3D Environments

This chapter very briefly discusses the basics of creating a 3D environment. The lack of examples makes following along with and applying the text difficult when it is not just stating the obvious. Anyone with experience will find this chapter too simple to be useful and anyone without experience will come away with no idea how to apply the principles.

Selected quote:
"The actual creation of 3D environments will vary in each software application, but the theory of the environment's display in a game is the same: create the perception of 3D space on a flat 2D computer screen."

Chapter 6.4. 2D Textures and Texture Mapping

This chapter discusses the basics of creating textures, including outlining the process of UV mapping to produce texture coordinates and maps.

Selected quote:
"Much like covering this book with a paper cover, or wrapping a football in gift wrap, or painting a ceramic sculpture of a horse with glaze paints, even a 3D model in a game needs the equivalent of a cover, a wrapper, or color coating."

Chapter 6.5. Special Effects

This chapter covers the basics of special visual effects, such as particle systems and shaders. This technically-minded chapter does not seem to fit in with the rest of the artist-oriented part 6.

Selected quote:
"Explosions, magical energy, collapsing buildings, splashing water, and weapon impacts. These are the pleasure and responsibility of the effects artist. It is the effects that make a beautifully crafted scene into something extraordinary. You breathe life into otherwise static environments. You are the bridge between gameplay, as it is represented by spreadsheets and parameters, and the player who sees mystical monsters summoned by the cast of his spell."

Chapter 6.6. Lighting

This chapter enumerates the different kinds of lights and very briefly describes them. The information covered should be common sense to anyone who has ever touched a 3D scene before, artist or not.

Selected quote:
"In the real world, light can emanate from a wide variety of sources. A scene might be lit by sunlight, moonlight, incandescent bulbs, red neon lights, car headlights, or torches. Additionally, in the real world there is a lot of indirect light that bounces off various surfaces, which will change the color and dispersion of the original light. In the digital realm, your options are limited to four common light models: point, spot, directional, and ambient."

Chapter 6.7. Animation

This chapter covers animation from the perspective of an artist, outlining basic topics such as facial animation and motion capture.

Selected quote:
"Animation is a tough job, make no bones about it. As the scope of design and the complexity of environments continue to increase for interactive games, the volume and variety of virtual inhabitants will also continue to increase. Learning the recommended workflow steps and approaches to setting up and animating this growing cast of digital actors will help secure more ongoing gratifying work for the art and animation staff. Newer tools of the trade will have to be learned and mastered to compete on all levels."

Chapter 6.8. Cinematography

This chapter overviews considerations for developing cinematics in games. The chapter barely covers the basics and its target audience is unclear; it offers little practical advice.

Selected quote:
"To expand your game production skills to the creation of cinematics, it is imperative that you be informed of the unique cinematic vocabulary and dedicate some focused time to the study and practice of this form of communication."

Chapter 6.9. Audio Design and Production

This chapter covers the basics of audio design, including sound design, music, and voiceovers. It serves as an outline of the topics in the field without making it clear how this information can be used or applied.

Selected quote:
"For games to deliver the quality experience that audiences have come to expect over a great century of movie-going, game creators must be serious about preplanning, creating, and implementing audio content into their game worlds."

Chapter 7.1. Game Production and Project Management

This chapter briefly outlines the stages of game development, including concept, preproduction, production, and postproduction.

Selected quote:
"The games industry is famous for its cutthroat competitiveness and secrecy. It takes a long time to make a game, so if too much information about the game leaks out early, a competing company could steal the publisher's thunder by beating them to the punch with a similar game."

Chapter 7.2. Game Industry Roles and Economics

This chapter outlines the role of different entities which work together to bring a completed game to retail stores.

Selected quote:
"Given the amount of money in play, a major stumble by any part of the value chain—or a paradigm shift in technology or business model—could turn the entire industry's balance of power on its head."

Chapter 7.3. The Publisher-Developer Relationship

This chapter covers the pitching process and publisher/developer negotiations, including payment and milestones.

Selected quote:
"While few people outside of senior management will ever need to apply the full range of knowledge given in this chapter, regardless of your chosen game development role or level you will inevitably be a part of this process in one way or another as it represents the framework for game development itself. The better your understanding of the process as a whole, the more effective you can be when operating as part of a team involved in an occasionally difficult but often hugely rewarding industry."

Chapter 7.4. Marketing

This chapter covers the role of marketing and publicity in game development, including media coverage and corporate branding. A recurring theme in this book, the target audience will find the information presented in this chapter useless due to already knowing it and readers outside of the field will be unable to apply it due to its vague presentation and lack of in-depth explanations.

Selected quote:
"Near completion of the game, the rounds must be made with editors to obtain magazine publicity and reviews. Finally, traditional media kicks in with magazine advertising, television advertising, and in-store promotions. Then, to maintain the momentum once the game is released, fan sites and enthusiast media must be serviced."

Chapter 7.5. Intellectual Property Content, Law, and Practice

This chapter discusses issues related to intellectual property, including patents, copyright, and trade secrets.

Selected quote:
"The impact of effective IP laws can be seen in the state of technological development in countries that honor IP rights and those that do not. It is not happenstance that the strongest world markets for video game creation and sales are North America, Europe/Australia, and Japan, all nations with a long tradition of IP rights registration and enforcement."

Chapter 7.6. Content Regulation

This chapter discusses a brief history of censorship in America and the creation of the ESRB.

Selected quote:
"Game developers and publishers who intend to push the envelope of acceptable content must take careful note of the laws and culture in which the games will be played."

ROUSE, RICHARD. *GAME DESIGN: THEORY AND PRACTICE*. PLANO, TEXAS: WORDWARE PUBLISHING, INC., 2001. PRINT.

Game Design: Theory and Practice introduces a beginner designer to the ideas of game design by example. The majority of the book consists of interviews with respected designers of PC games and analyses of well-known, if a little dated, titles. For each of the games it analyzes, the book addresses what aspects of these games made them successful, approaching the topic of game design from a pragmatic perspective by discussing what it is that players want out of games and how to address that goal.

Chapter 1. What Players Want

This chapter discusses reasons why players play games and what they expect out of them.

Selected quote:
"The fact remains, however, that many people want to be transported to a world more glamorous than their own."

Chapter 2. Interview: Sid Meier

Sid Meier explains how he got started designing strategy games, what games inspired him, and the process he uses in coming up with a game concept.

Selected quote (Sid Meier):
“I think game design is a pretty gradual, evolutionary process, where we build on what’s gone on before, and make it a little bit better, a little bit more interesting. Every so often a new genre comes along to open our eyes to some new possibilities. I think that will continue, but it’s interesting to me that a three-year old computer is completely obsolete, but a three-year-old game can still be a lot of fun.”

Chapter 3. Brainstorming a Game Idea: Gameplay, Technology, and Story

This chapter begins the step-by-step process of developing a game idea, suggesting different starting points and acknowledgment of limitations a designer may encounter.

Selected quote:
"If the parts do not work together, it does not matter how many markets the concept covers: no gamers will be interested in playing the final game."

Chapter 4. Game Analysis: Centipede

Traits common in classic arcade games are outlined.

Selected quote:
"Centipede is marvelous at creating and maintaining a tense situation for the player, while still providing brief “breathing periods” within the action. Designers of modern games, who are always concerned with ramping up difficulty for the player, could learn much by analyzing how Centipede keeps the player constantly on his toes without ever unfairly overwhelming him."

Chapter 5. Focus

Development of a game's focus and the importance of having one are discussed.

Selected quote:
"A game's focus is the designer's idea of what is most important about a game. In this chapter I encourage designers to write their focus down in a short paragraph, since putting it down in writing can often clarify and solidify a designer's thoughts. However, it is the idea of the focus which is of paramount importance. In a way, a game's focus is similar to a corporation's "mission statement," assuming such mission statements are actually meaningful and used to guide all of a corporation's decisions."

Chapter 6. Interview: Ed Logg

Ed Logg discusses the design process for some of his titles and the changes he had to adapt to in the move from coin-operated arcade games to games on sophisticated 3D platforms.

Selected quote (Ed Logg):
"I believe it is extremely important to work on the aspect of the game that will make or break the concept. The front-end movies, story line, front and back end screens can all wait until the gameplay has been proven."

Chapter 7. The Elements of Gameplay

Different aspects of gameplay are listed and compared, including solutions, non-linearity, and user interface.

Selected quote:
"Non-linearity is another buzzword in the game industry, and well it should be. Non-linearity is what interesting gameplay is all about, and many designers forget this in their work. Non-linearity gives interactivity meaning, and without nonlinearity, game developers might as well be working on movies instead. The more parts of your game that you can make non-linear, the better your game will be."

Chapter 8. Game Analysis: Tetris

Traits common in classic arcade games are outlined along with brief discussion on how the random generation of pieces creates a unique game each time Tetris is played.

Selected quote:
"Indeed, there are many indications that Tetris is an example of what I call the "classic arcade game" form. This is despite the fact that it was not originally conceived for gameplay in the arcades (though its rampant popularity eventually led to its arrival there), and that it was created years after the classic arcade game form had stopped being used by professional arcade game developers. Looking over the list of classic arcade game qualities described in the Centipede analysis in Chapter 4, we can see just how Tetris fits the guiding principles of the form."

Chapter 9. Artificial Intelligence

Goals of artificial intelligence in games are discussed along with how they behave in their environment and the importance of preventing it from being too intelligent.

Selected quote:
"Another potential AI programming pitfall is creating an AI which, though it actually performs like a "real" person, ends up detracting from the gameplay as a result. In terms of the stories they tell and the settings they employ, games are often contrivances, strictly unreal situations that are specifically set up because they are interesting, not because they are authentic, and the AI must support this."

Chapter 10. Interview: Steve Meretzky

Steve Meretzky discusses his history developing games at Infocom, including challenges faced in working with the medium and the process he used to design and implement games.

Selected quote (Steve Meretzky):
"So, I think without an avenue for that kind of more experimental game, and with publishers being even more conservative than in other industries, the bottom line is publishers want the "safe game." And the safe games tend to be the ones that aren't serious or message-oriented."

Chapter 11. Storytelling

Ways of telling a story in a game are discussed along with common pitfalls and ways to integrate story with gameplay.

Selected quote:
"There are a number of ways in which a game can tell a story. Customarily, games use a number of different storytelling devices to communicate their story, with different games relying on some devices more than others. The type of story you hope to tell, what technology you will be using, and the gameplay of your game will determine what storytelling devices will work best for your game."

Although Rouse interviews many of the big names in the industry, the interviews focus on recounting each designer's personal experiences and preferences instead of the topic of game design itself. Though occasionally an interviewee will make an insight into the industry, these gems are hard to mine out of the chatty anecdotes. The game analyses are the same way, describing aspects of the game instead of truly analyzing them. As a whole, *Game Design: Theory and Practice* is more useful as a book about the history of game design rather than as a tool to studying the field itself.

Chapter 12. Game Analysis: *Loom*

Ways in which *Loom* departed from other adventure games at the time are discussed, including the rationale behind its easier difficulty and simplified interface.

Selected quote:
"But the problem with making games that only appealed to the veteran enthusiasts was that it made it hard for any new players to start playing adventure games. If the player was not already experienced with these twisted and convoluted exercises in masochism, there was a good chance an adventure game would frustrate that player so much that he would feel no desire to try another one."

Chapter 13. Getting the Gameplay Working

The process of developing and implementing gameplay is outlined.

Selected quote:
"Getting your gameplay working is one of the most essential parts of game design, yet it is also one of the most difficult to try to explain or teach. A lot of the process involves understanding what is fun about a game in a way that no book can ever explain. Indeed, a game's design changes so often during the implementation stage that I do not believe a designer who is not actively working on the game during that period can truly be considered to have designed it."

Chapter 14. Interview: Chris Crawford

Chris Crawford discusses how the gaming industry has changed over the years and what factors have shaped the direction the industry has taken.

Selected quote:
"Anything less than being in the top ten will lose money. So very quickly it became a hit-driven business. That was already starting in the late '80s, but Wing Commander sealed it. So once it became a hit-driven industry, the whole marketing strategy, economics, and everything changed, in my opinion, much for the worse. The other thing was that Wing Commander also seemed to reestablish or reconfirm the role of the action game as the wave of the future. And basically that's where the industry solidified, and the cement has now set."

Chapter 15. Game Development Documentation

Different types of development documentation and the benefits of writing them are listed. Examples include pitch document, design document, flowcharts, scripts, and storyboards.

Selected quote:
"The necessity of game development documentation is a side effect of the increasing size of game development teams. In the early days of game development, when a development team consisted of one multi-talented individual, documenting the functionality of the game was less important. If that one person was able to establish and implement a vision for the project's gameplay, it did not especially matter if she wrote it down or not."

Chapter 16. Game Analysis: *Myth: The Fallen Lords*

Ways in which Myth's design was shaped by the decision to use a 3D engine are discussed, specifically detailing how this change allowed it to introduce new mechanics into the strategy genre.

Selected quote:
"Myth is also a good example of a well-focused game design. As mentioned previously, Myth came out several years after the success of two other RTS titles, Command & Conquer and WarCraft. In both of those games, the player builds structures which exploit the terrain's natural resources in order to create additional units. The player is then able to direct these units against his opponent in a combination of ways. Thus, those trend-setting RTS games are a mixture of gameplay— part resource management and building, part combat. Many of the subsequent RTS titles, both the successes and the failures, copied this general model, dividing the player's efforts between unit creation, resource exploitation, and strategic unit deployment."

Chapter 17. The Design Document

Important sections of a game design document are described as well as pitfalls to avoid while writing one.

Selected quote:
"Though there is a great temptation to do whatever is necessary to "bulk up" your document in order to make it seem more thorough and complete, you want to avoid repeating information as much as possible. This is challenging as you talk about an element of gameplay that directly relies on another system which you discussed ten pages back. Instead of redescribing the system, refer your reader to the system's original definition. This is important since, as you find yourself updating the document over the course of the project's development, you will need to change data in only one place instead of several."

Chapter 18. Interview: Jordan Mechner

Jordan Mechner explains how he got his start in game design and how he tried to merge storytelling techniques from filmmaking into his games.

Selected quote (Jordan Mechner):
"The two art forms are not all that dissimilar, when it comes to sitting down and wrestling with a set of elements and trying to get them into some kind of finite shape. The challenges of taking an established genre and breaking new ground with it somehow, of making it surprising and suspenseful, of economically using the elements at your disposal, are very similar whether it's a game or a film."

Chapter 19. Designing Design Tools

The uses for supplementary design tools, such as level editors and scripting engines, are discussed.

Selected quote:

"The best development tools for a game are composed of a delicate mix of off-the-shelf programs and proprietary editors. A good team will know just how much to use of each so that they are neither wasting the time of their programmers by having them develop overly sophisticated tools when a good commercial package is better suited, nor unreasonably restraining the efforts of their designers by not allowing them to refine the game's content from within the level editor."

Chapter 20. Game Analysis: *The Sims*

Reasons for *The Sims*'s success are explored, including its focus on people rather than things and the way it encourages players to develop emotional attachment to their characters.

Selected quote:
"A big part of what makes The Sims work is the range of choices the player is presented with for what he can do with his sims. Abdicating authorship is all well and good, but if the designer fails to provide the player enough meaningful choices, the player will find himself only able to author a very narrow range of stories. Indeed, it is the designer's responsibility in creating a software toy to design that toy with a broad enough range of possibilities that the appeal of playing with it is not quickly exhausted. And Wright did that expertly with The Sims, leaving the player with a constant feeling that there is so much more to do and see in the game-world, that one could never hope to do it all."

Chapter 21. Level Design

The fundamental components of a level, the elements which constitute a good level, and the process of designing a level are outlined.

Selected quote:
"Once the levels a game needs have been decided on, possibly with some idea of how those levels must support the story, the next task is to actually create those levels. Regardless of its location in the game as a whole, the goal of every level is to provide an engaging gameplay experience for the player. When working on the levels for a game, it is important to constantly keep in mind the focus of the game."

Chapter 22. Interview: Will Wright

Will Wright discusses the thought process for several of his titles and the difficulties he faced in getting *The Sims* off the ground.

Selected quote (Will Wright):
"You also really have to understand what the core of the fun is going to be in the game. And if you're adding this stuff just so you can put more bullet points on the back of the box, but it's not actually making the game more fun, it's totally wasted effort. There's an old Japanese saying that I love, and it's about gardening: "Your garden is not complete until there's nothing else you can remove.""

Chapter 23. Playtesting

The importance of playtesting is discussed, including topics such as finding the right playtesters, how to conduct playtesting, and correcting difficulty in response to playtesting.

Selected quote:
"The most important part of interacting with playtesters is to actually spend most of your time watching them play instead of telling them how to play. Let them play the game their own way and see how they fare. The temptation to correct the playtester's actions is great and can be hard to resist. By the time the traditional playtesters start on the game, the designer has already played the game so much that she is intimately familiar with what the player is "supposed" to do in a given situation and how the game is "supposed" to be played in general."

SALEN, KATIE AND ZIMMERMAN, ERIC. *RULES OF PLAY: GAME DESIGN FUNDAMENTALS*. BOSTON: MIT PRESS, 2004. PRINT.

Rules of Play: Game Design Fundamentals takes a thoroughly academic approach to the topic of game design, synthesizing the opinions of many different authors in order to compile a vocabulary of game design. As a result, the book does not bring many new concepts to the table; many of its proposals are derived from the opinions of previous authors. In spite of this, the book is enlightening, bringing to attention many diverse and relevant viewpoints.

Chapter 1. What Is This Book About?

This chapter discusses the need to establish a critical discourse about game design and how this book is intended to take the first step in this direction.

Selected quote:
"As a design practice, game design has its own essential principles, a system of ideas that define what games are and how they work. Innovation in the field can grow only from a deep understanding of these basic concepts. What are these game design fundamentals? They include understanding design, systems, and interactivity, as well as player choice, action, and outcome."

Chapter 2. The Design Process

In this chapter, the author lays out the structure of the book and describes the design process for a Lord of the Rings board game.

Selected quote:
"Once the initial concept is properly elaborated, playtesting becomes the core activity of game development. The fun and excitement of playing cannot be calculated in an abstract fashion: it must be experienced."

Chapter 3. Meaningful Play

The author discusses the relationship between meaning, play, and games and defines the concept of meaningful play.

Selected quote:
"Meaningful play in a game emerges from the relationship between player action and system outcome; it is the process by which a player takes action within the designed system of a game and the system responds to the action. The meaning of an action in a game resides in the relationship between action and outcome. "

Chapter 4. Design

This chapter discusses design, semiotics, and signs. The role of signs in communication is explored.

Selected quote:
"Design is the process by which a designer creates a context to be encountered by a participant, from which meaning emerges."

Chapter 5. Systems

This chapter discusses the elements which constitute a system and how a game can be modeled as a system.

Selected quote:
"In defining and understanding key concepts like design and systems, our aim is to better understand the particular challenges of game design and meaningful play. Game designers do practice design, and they do so by creating systems."

Chapter 6. Interactivity

This chapter highlights four different modes of interactivity and examines how interactivity in games can be expressed as a series of action/outcome events.

Selected quote:
"Creating a game means designing a structure that will play out in complex and unpredictable ways, a space of possible action that players explore as they take part in your game."

Chapter 7. Defining Games

This chapter explores the difference and relationship between play and games by comparing the opinions of authors such as David Parlett, Clark C. Abt, Johann Huizinga, Roger Caillois, Bernard Suits, Chris Crawford, Greg Costikyan, Elliot Avedon, and Brian Sutton-Smith and arriving at a synthesized definition. Interestingly, it seems that the author is more concerned with defining games through common elements of other authors' own definitions instead of

proposing a unique one. This is a theme that will continue throughout the book.

Selected quote:
"A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome."

Chapter 8. Defining Digital Games

This chapter explains what traits digital games have that differentiate them from other games.

Selected quote:
"The key question for game designers and digital media is not, What is it? But instead, What can it do?"

Chapter 9. The Magic Circle

This chapter describes the boundary which separates a game from reality.

Selected quote:
"To play a game means entering into a magic circle, or perhaps creating one as a game begins. The magic circle of a game might have a physical component, like the board of a board game or the playing field of an athletic contest. But many games have no physical boundaries-arm wrestling, for example, doesn't require much in the way of special spaces or material. The game simply begins when one or more players decide to play."

Chapter 10. The Primary Schemas

This chapter defines three fundamental schemas: rules (formal game design schemas), play (experiential game design schemas), and culture (contextual game design schemas). These schemas are a framework upon which the rest of the book sits, providing three different perspectives on game design.

Selected quote:
"It is possible to consider the logic of a rule system, to consider the game formally, without understanding how that rule-system will be experienced. However, in framing games as PLAY, we must consider not only the rules, but also the rule-system as a context designed to deliver a particular experience of play for the game's participants."

Chapter 11. Defining Rules

This chapter explores the kinds and qualities of rules as well as the role they play in determining the player's interactions with the game. In an unusual variation from the rest of the book, this chapter does not actually "define" rules. It explores what roles rules play as well as the characteristics of rules but never proposes a definition.

Selected quote:

"From a formal, rules-based point of view, what does it mean to take part in a game? To play a particular game, players voluntarily submit to the game; they limit their behaviors to the specific restrictions imposed by the game rules. Once play begins, players are enclosed within the artificial context of a game—its magic circle—and must adhere to the rules in order to participate."

Chapter 12. Rules on Three Levels

This chapter discusses the differences between constituative, operational, and implicit rules as well as how they relate to the identity of a game.

Selected quote:
"When it comes to defining the formal identity of a game, only the rules matter."

Chapter 13. The Rules of Digital Games

This chapter discusses the unique qualities of rules in digital games and how a game's program code relates to its rules.

Selected quote:
"Sometimes, aspects of a game that are normally not considered part of the rules (such as the visual component) can in fact be key parts of the formal structure."

Chapter 14. Games as Emergent Systems

This chapter discusses games as complex systems and how emergence can add to a game's complexity.

Selected quote:
"Complexity is intrinsically linked to meaningful play. Playing a game is synonymous with exploring a game's space of possibility. If a system is fixed, periodic, or chaotic, it does not provide a space of possibility large or flexible enough for players to inhabit and explore through meaningful play. On the other hand, if a system is emergent, exploring possible relationships among game elements is continually engaging."

Chapter 15. Games as Systems of Uncertainty

This chapter discusses different types of uncertainty in games and how it must be used delicately in games to create meaningful play.

Selected quote:
"There is an intrinsic connection between uncertainty and meaningful play. Uncertainty is usually thought of as something that disempowers players by removing a sense of choice and agency, yet paradoxically, it is the uncertain outcome of a game that allows players to feel like their decisions have an impact on the game."

Chapter 16. Games as Information Theory Systems

This chapter discusses information theory and how freedom of choice, uncertainty, and information tie together.

Selected quote:
"Meaningful play requires that players choose actions from among a palette rich enough to support a large space of possibility but limited enough to properly structure their decisions."

Chapter 17. Games as Systems of Information

This chapter discusses different kinds of information and how they are used in games.

Selected quote:
"When you create information in your game, its value for the players emerges from both its objective and perceived status: its structural position within a larger informational economy and the player's knowledge about that economy. Shaping these aspects of your game's design is a key component in creating meaningful play."

Chapter 18. Games as Cybernetic Systems

This chapter discusses self-regulation and feedback loops in games.

Selected quote:
"As a cybernetic system, the rules of a game define the sensors, comparators, and activators of the game's feedback loops. Within a game, there are many sub-systems that regulate the flow of play, dynamically changing and transforming game elements."

Chapter 19. Games as Game Theory Systems

This chapter discusses game theory, rational decisions, decision trees, and strategies.

Selected quote:
"As we know from our definition of games, all games have a quantifiable outcome: someone wins, or loses, everyone wins or loses, or player performance is measured in points, time, or some other numerical value. The concept of assigning a numerical utility to decision outcomes is really just another way of creating a quantifiable outcome."

Chapter 20. Games as Systems of Conflict

This chapter discusses conflict and cooperation as key aspects of a game.

Selected quote:

"The space of possibility of a game is a plane stretched between two anchorage points: the beginning and the end of the game. The players journey from one end to another, making their way from the start to the finish. In a well-designed game that supports meaningful play, this journey between points should be taut and efficient, with every element contributing directly or indirectly to the larger experience."

Chapter 21. Breaking the Rules

This chapter describes the different types of players based on their adherence to the rules, interest in winning, and degree of lusory attitude.

Selected quote:
"Player behavior is not universally law-abiding. Given any particular game, there are many ways to play it and many ways to bend and break its rules. For game designers, this means that you should never take players' behavior for granted. You need to assume that your game will be played not just by earnest rule-followers, but by zealously dedicated players, inappropriately unsportsmanlike players, brilliantly secretive cheaters, and uncaringly nihilistic spoil-sports."

Chapter 22. Defining Play

This chapter explores the relationship between games and play as well as defines the different types of play.

Selected quote:
"When you are designing a game, you should maximize meaningful play for your participants at every possible moment. Often, this means thinking about how you can inject the proper spirit of playfulness into an otherwise ordinary behavior."

Chapter 23. Games as the Play of Experience

This chapter discusses how a player's participation in a game gives rise to an experience and how a well-designed game is oriented around a core mechanic.

Selected quote:
"Too often, game designers forget that they are creating, above all, an experience of play. It is not enough to tell a story. It is not enough to create pretty pictures or use dazzling technology. A game designer creates an interactive system, a set of choices, an activity."

Chapter 24. Games as the Play of Pleasure

This chapter discusses the different kinds of pleasure and how they are utilized in games to engage the player.

Selected quote:

“Within the game the goal takes on enormous importance, but the goal itself as a formal construct is not the point: the goal is important only insofar as it serves to shape a player's experience.”

Chapter 25. Games as the Play of Meaning

This chapter discusses the relationship between games and representation as well as the meaning which emerges from a player’s experience with the game.

Selected quote:
“Representation in games emerges from the relationship between a rigid, underlying rule structure and the free play of meaning that occurs as players inhabit the system.”

Chapter 26. Games as Narrative Play

This chapter discusses games as a medium for narratives and how certain explicit and implicit aspects of a game contribute to its storytelling.

Selected quote:
“A game's goal, or series of goals, is part of the narrative context that makes up the game. When goals are well-designed to support narrative play, a player's interaction with the game world becomes consistently meaningful.”

Chapter 27. Games as the Play of Simulation

This chapter explores how all games are, to an extent, simulations and what attributes games exhibit due to being simulations.

Selected quote:
“The procedural representation of new kinds of game content is within our grasp, but new content can only be discovered by paying attention to the fundamental principles of game design and meaningful play. Game designers need to cultivate a deeper understanding of the form in which they work.”

Chapter 28. Games as Social Play

This chapter discusses social interactions which are brought about through the playing of games. The author discusses the different roles of players in a game and how the explicit, “official” rules of a game can differ from the way the game is played by a community of players.

Selected quote:
“The game itself is an artificial social space that players enter, yet the "rules" by which players come to know a sense of trust belong to the world outside the game, to the realm of shared social and cultural values.”

Chapter 29. Defining Culture

This chapter discusses the mutual influence that games and culture have on each other and the importance of considering a game's cultural context while designing it.

Selected quote:
"Whether players and spectators realize it or not, when they play or watch a game they are taking part in generating, embodying, and transforming these cultural meanings. These meanings are not fixed, but are always in some way "at play" within existing cultural structures."

Chapter 30. Games as Cultural Rhetoric

This chapter discusses how games are used as contexts for cultural learning and how they can be used as instruments of persuasive discourse.

Selected quote:
"Recognizing that all games contain and endorse particular cultural rhetorics is a good first step. But if we want to stretch people's conceptions of games into spaces beyond gaming subcultures, into spaces occupied by art, literature and film—or politics, punk rock, and the academy—then designers need to be much smarter in how they incorporate cultural rhetorics in the actual design of their games."

Chapter 31. Games as Open Culture

This chapter discusses transformative play in the context of games being modifiable by the players.

Selected quote:
"Player-as-producer artifacts not only reflect the meanings and values of the games from which they arise, but also contribute to the meaning and value of the cultural contexts in which the games exist."

Chapter 32. Games as Cultural Resistance

This chapter "explores the tension between games and their cultural contexts."

Selected quote:
"Because a game by its very nature has room for the movement of free play, it is always possible for players to drive a wedge into the system, bending and transforming it into a new shape."

Chapter 33. Games as Cultural Environment

This chapter explores how games can blur the boundary between the game and reality.

Selected quote:
"Playing a game means submitting to the authority of the magic circle, which includes the cultural conventions expressed through implicit rules. In this sense, the magic circle of a game extends beyond any individual game to include culture as a whole. To play a game, any game, is not just to play within the rules of that particular game, but within the rules of a larger cultural context that define what it means to play at all."

Concisely-written and easily accessible, this book is a must-read for anyone with an interest in the theory behind game design. *Rules of Play: Game Design Fundamentals* is one of the only books to take this approach and it serves as a thorough compendium of terms and theories. The authors set out to establish a common language of game design, which they posit is necessary in order for the field to mature, and in this endeavor, they succeed.

SCHELL, JESSE. *THE ART OF GAME DESIGN: A BOOK OF LENSES*. BURLINGTON, MA: ELSEVIER/MORGAN KAUFMANN, 2008. PRINT.

The Art of Game Design is a book that provides the reader with a large number of analytical tools and ideas with which to improve their games. It does so through 100 "lenses", which are perspectives for looking at a game and gives a number of questions to help the reader understand and use each perspective. *The Art of Game Design* examines many aspects of games and their design, from the perspectives of both the designer and the player. The book looks at games as a means of creating an experience for the player and constantly seeks to improve that experience by improving or altering the game. *The Art of Game Design* covers each part of game design and its process, asking new questions each step of the way.

Chapter 1. In the Beginning, There Is the Designer

This chapter describes how one becomes a game designer by making games, and that failures are a part of becoming a good one. It also includes a list of many useful skills for game designers, of which listening is deemed the most important.

Selected quote:
"There is only one way to find out if you have the major gift. Start down the path, and see if it makes your heart sing."

Chapter 2. The Designer Creates an Experience

Schell defines the creation of experiences as the goal of a game designer, and describes ways to break down, observe, and consider experiences

Selected quote:
"As a game designer trying to design an experience, your goal is to figure out the essential elements that really define the experience you want to create, and find ways to make them part of your game design."

Chapter 3. The Experience Rises Out of a Game

This chapter is contains extensive and thoroughly explained definitions of what both play and games are, and investigates the reasons for why we enjoy them.

Selected quote:
"How can games, which are nothing more than sets of rules, have this magical effect on us?"

Chapter 4. The Game Consists of Elements

This chapter breaks down games into the elements of mechanics, story, aesthetics, and technology, as well outlines as the importance of each and the relationships between them.

Selected quote:
"This is one of the great challenges of game design: to simultaneously feel the experience of your game while understanding which elements and elemental interactions are causing that experience, and why."

Chapter 5. The Elements Support a Theme

This chapter examines the importance of a central theme to the player's experience and how a game designer can use a game's elements to reinforce its theme. Additionally, this chapter looks at how a game is defined, often in subtle ways, by its theme.

Selected quote:
"The theme is what your game is about. It is the idea that ties your entire game together — the idea that all the elements must support."

Chapter 6. The Game Begins with an Idea

This chapter describes ways to better generate and process ideas that can be used as the basis for games.

Selected quote:
"It's great when game ideas, Athena-like, spring forth from your head, fully formed. But it doesn't happen that way every time."

Chapter 7. The Game Improves Through Iteration

Schell talks about how games improve with each iteration, and gives advice on how to get the most out of each iteration and how to do so quickly.

Selected quote:
"The Rule of the Loop: The more times you test and improve your design, the better your game will be."

Chapter 8. The Game is Made for a Player

This chapter discusses ways in which one can gain a better understanding of a game's audience and how understanding a game's players can allow one to improve their game.

Selected quote:
"Like a cultural anthropologist, you should spend time with your target audience, talking with them, observing them, imagining what it is like to be them. Everyone has some innate power to do this — but if you practice it, you will improve. If you can mentally become any type of player, you can greatly expand the audience for your games, because your designs will be able to include people that other designers have ignored."

Chapter 9. The Experience is in the Player's Mind

This chapter discusses the idea that the player's perception and experience from the game are what matter, rather than the game itself. It also talks about how one can improve the player's experience by altering a game's flow and how the game motivates the player.

Selected quote:
"The important thing to understand is that everything we experience and think about is a model — not reality. Reality is beyond our understanding and comprehension. All we can understand is our little model of reality. Sometimes this model breaks, and we have to fix it. The reality we experience is just an illusion, but this illusion is the only reality we will ever know. As a designer, if you can understand and control how that illusion is formed in your player's mind, you will create experiences that feel as real, or more real, than reality itself."

Chapter 10. Some Elements are Game Mechanics

This chapter explores game mechanics and the ways that players mentally perceive and model them. The mechanics covered include space, objects (and their properties), player actions and their results, the rules of the game, the role of skill in gameplay, and how chance affects the game (a brief overview of probability is included in this section).

Selected quote:
"Game mechanics are the core of what a game truly is. They are the interactions and relationships that remain when all of the aesthetics, technology, and story are stripped away."

Chapter 11. Game Mechanics Must be in Balance

This chapter discusses different forms of game balance, and several ways in which game designers can work towards achieving them.

Selected quote:
"One important thing to balance in every game is the length of the gameplay. If the game is too short, players may not get a chance to develop and execute meaningful strategies. But if the game goes on too long, players may grow bored, or they may avoid the game because playing it requires too much of a time commitment."

Chapter 12. Game Mechanics Support Puzzles

This chapter looks at the role of puzzles in games, as well as what puzzles are and how one can make puzzles that are enjoyable to the player.

Selected quote:
"When a game has a dominant strategy, it doesn't cease to be a game, it just isn't a very good game. Children like tic-tactoe until they find the dominant strategy. At that point, the puzzle of tic-tac-toe has been solved, and the game ceases to be interesting. So usually, we say games that have dominant strategies are bad. Unless, of course, the whole point of the game is to find that dominant strategy. This leads to an interesting definition of a puzzle:

Selected quote:
"A puzzle is a game with a dominant strategy."

Chapter 13. Players Play Games Through an Interface

Schell writes about game interfaces and the ways in which a game's interface affects a player's interaction with the game, as well as tips for how to make or improve a game interface.

Selected quote:
"Players project themselves into games, and on some level disregard that the interface is there at all, unless it suddenly becomes confusing. A person's ability to project consciousness into whatever they are controlling is almost alarming. But it is only possible if the interface becomes second nature to the player, and this gives us our next lens."

Chapter 14. Experiences Can be Judged by Their Interest Curves

This chapter examines ways of grabbing and maintaining the player's interest throughout the game.

Selected quote:
"Some events are simply more interesting than others. Generally, risk is more interesting than safety, fancy is more interesting than plain, and the unusual is more interesting than the ordinary.

A story about a man wrestling an alligator is probably going to be more interesting than a story about a man eating a cheese sandwich."

Chapter 15. One Kind of Experience Is the Story

This chapter talks about the problems with stories in games, and how they can interfere with the rest of the experience. It then explains how to create a story that appeals to the player while avoiding conflicts with the rest of the game.

Selected quote:
"The idea that the mechanics of traditional storytelling, which are innate to the human ability to communicate, are somehow nullified by interactivity is absurd. It is a poorly told story that doesn't compel the listener to think and make decisions during the telling. When one is engaged in any kind of storyline, interactive or not, one is continually making decisions: "What will happen next?""

Chapter 16. Story and Game Structures can be Artfully Merged with Indirect Control

This chapter discusses ways in which the game designer may guide the player's actions while still creating a feeling of freedom for them, through the use of indirect control.

Selected quote:
"We don't always have to give the player true freedom — we only have to give the player the feeling of freedom. For, as we've discussed, all that's real is what you feel — if a clever designer can make a player feel free, when really the player has very few choices, or even no choice at all, then suddenly we have the best of both worlds — the player has the wonderful feeling of freedom, and the designer has managed to economically create an experience with an ideal interest curve and an ideal set of events."

Chapter 17. Stories and Games Take Place in Worlds

Schell investigates the importance and power of the worlds games take place in, and the way in which a world that can be seen through multiple types of media (games, books, TV, etc.) strengthens each of those mediums.

Selected quote:
"Henry Jenkins coined the term *transmedia worlds* to refer to fantasy worlds that can be entered through many different media — print, video, animation, toys, games, and many others. This is a very useful concept, for it really is as if the world exists apart from the media that support it."

Chapter 18. Worlds Contain Characters

This chapter talks about how to make compelling characters whose presence will enhance a game.

Selected quote:
"The first type of character that is a good choice as an avatar is the kind that the player has always wanted to be. Characters like this — such as mighty warriors, powerful wizards, attractive princesses, ultra suave secret agents, etc. — exert a pull on the psyche, since the force inside us that pushes us toward being our best finds the idea of projecting ourselves into an idealized form very appealing. Although these characters are not much like our real selves at all, they are people we sometimes dream about being."

Chapter 19. Worlds Contain Spaces

This chapter explains the ways in which the size and positioning of the game world and the objects in it can alter the player's perceptions of them, and can seems unnatural if the developer is not careful.

Selected quote:
"When we study some of the spaces that have been made for popular videogames, they are often very strange. They have huge amounts of wasted space, weird and dangerous architectural features, no real relationship with their outside environment, and sometimes areas even overlap with themselves in physically impossible ways."

Chapter 20. The Look and Feel of a World Is Defined by Its Aesthetics

This chapter discusses how the visual aspects of a game can improve the players experience.

Selected quote:
"It makes sense to view your game artwork through many lenses, because the key to creating great artwork is in your ability to see. Not just to see a salt shaker and say "that's a salt shaker, " but to really see it — see its shapes, colors, proportions, shadows, reflections, and textures — to see its relationship to its environment and to the people who use it, and to see its function, and to see its meaning."

Chapter 21. Some Games are Played with Other Players

This chapter looks at multiplayer games, and the motivations for player interactions within such games.

Selected quote:
"Clearly, playing with other people is natural, and in fact, the preferred way for us to play games. But why? In this book so far, we have discussed dozens of reasons people play games: for pleasure, for challenge, for judgment, for rewards, for flow, for transcendence, and many more. Although some of those are enhanced by the presence of other players, none of them require that presence."

Chapter 22. Other Players Sometimes Form Communities

This chapter talks about why players form communities around games, and how game developers can encourage player communities.

Selected quote:
"If you believe that community is important to your game experience, you need to do more than just cross your fingers and hope it will happen. You need to create appropriate tools and systems to let your players communicate and organize, and you may need to have professional community managers who build and maintain a strong feedback loop between designers and players."

Chapter 23. The Designer Usually Works with a Team

This chapter discusses the importance of teamwork when developing games, with a list of keys to good communication within a team.

Selected quote:
"If everyone on the team has a deep and true love for the game they are making together, and for the audience they are making it for, all differences and disagreements will be set aside in service of bringing the game into existence and making it be as wonderful as it can possibly be."

Chapter 24. The Team Sometimes Communicates Through Documents

This chapter deals with documentation during game development, and talks about different kinds of documents and what each is for.

Selected quotes:
"Game documents have exactly two purposes: memory and communication."
"**Game Design Overview**. This high-level document might only be a few pages. It is often written primarily for management so that they can understand enough about what this game is, and who it is for, without getting into too much detail. The overview document can be useful for the whole team to get a sense of the big picture of the game."

Chapter 25. Good Games Are Created Through Playtesting

This chapter talks about the importance of playtesting during development, and gives lists of questions to ask yourself and playtesters during the process.

"A post-game interview is a great way to ask players questions too complex for a simple survey sheet. It's also a way to get a sense of how they really felt about the game, since you can see emotion in their faces and hear it in their voices."

Chapter 26. The Team Builds a Game with Technology

This chapter explores the role of technology in game design, as well as common trends in technological development.

Selected quote:
"One of the most concrete ways to keep a sane perspective about technology is to understand the difference between *foundational* and *decorational* technologies. Foundational technologies are the ones that make a new kind of experience possible. Decorational technologies just make existing experiences better."

Chapter 27. Your Game Will Probably Have a Client

This chapter is about the interactions that occur between a designer and their client, and what designers can do to make those interactions more useful.

Selected quote:
"When you can manage to help a client figure out what they actually want, you are engaging in the design process, and at the same time, you are empowering your client by giving him an education he needs. If you play the game right, the client will come away feeling smart, and you will have designed a game that meets his needs perfectly."

Chapter 28. The Designer Gives the Client a *Pitch*

This chapter talks about giving a game pitch, and gives a list of helpful suggestions for making your pitch a good one.

Selected quote:
"During your pitch, you are going to get curveballs. The person you are pitching to might suddenly reveal they hate your concept — what else do you have? You might have planned on a one-hour meeting only to be told "I only have twenty minutes. " You need to handle these kinds of things with coolness and confidence."

Chapter 29. The Designer and Client Want the Game to Make a *Profit*

This chapter introduces the business of video games and why designers should have knowledge of it, as well as a few business questions designers should ask about their games.

Selected quote:
"Keep in mind the golden rule: The one with the gold makes the rules.

For this reason, it's really important that you understand enough about the business of games so that you can have an intelligent discussion with the money people. This will give you much more creative control, because if you can explain why your precious feature will make more money, in

terms they'll understand and believe, you've got a much better shot at having the game turn out the way you know is best."

Chapter 30. Games Transform Their Players

This chapter talks about the impact that games on players. It discusses how games can be good for their players, how they can be bad for their players, and the importance of realizing that what the player gets out of a game is an experience.

Selected quote:
"Sometimes we are simply unable to let go of our worries, either because of their size or their sheer number. Games force our brains to engage with something completely unconnected to our worries, letting us escape them for a while, and giving us a much needed "emotional rest.""

Chapter 31. Designers Have Certain Responsibilities

Schell writes that game designers have a responsibility to make the influence of their game on the player is a positive one, and that players (especially of online games) are not harmed by the game.

Selected quote:
"Many designers decide that they cannot be held responsible for what happens in their game, and they leave it to the lawyers to decide what is and is not safe. But are you content to leave your ethical responsibility in the hands of corporate lawyers? If you aren't willing to take personal responsibility for the games you make, you shouldn't be making them."

Chapter 32. Each Designer has a Motivation

This chapter tells designers to ask themselves why they make games, and to ask of any game they make "Is making this game worth my time?"

Selected quote:
"We spoke about how much more powerful your game will be if you know its theme, but do you know your own personal theme? You must figure it out as soon as possible, for once you know it, you will undergo an important creative change: your conscious and subconscious motivations will be united, and your work will gain a passion, a focus, and an intensity that cannot possibly be greater."

Chapter 33. Goodbye

This chapter consists of a few short paragraphs that form the conclusion of the book.

Selected quote:
"My goodness! Look at the time! I've talked long enough to fill a whole book."

The Art of Game Design is an excellent resource for game designers. The perspectives it provides with each "lens" give valuable insight about game design, and the questions it asks look for the "why?" as often as the "how?" It makes its points through the use of numerous examples, some of which are about games and others which are drawn from life experience. Overall, *The Art of Game Design* imparts a lot to its reader both about game design and about people in general. *The Art of Game Design* is a book that all students of game design should read.

3.2: CLASSIFYING GAME DESIGN LITERATURE

Although opinions about what constitutes game design and how it should be taught are as varied as games themselves, patterns in the subject matter and the approaches taken to it in these textbooks are evident. An attempt has been made to classify the analyzed books into five distinct categories:

- books which outline common elements in games
- books which describe industry methods of game development
- books which suggest techniques to aid in becoming a better game designer
- books which describe the process of assembling a design for industry-friendly games
- books which discuss the theory behind game design from an academic perspective.

3.2.1: "ELEMENTS OF GAMES BOOKS"

One of the most common types of books about game design is one in which the author identifies common aspects of games and lists them. Books which fall under this category may exhibit traits of other categories (most commonly the second) but what makes these books distinct is their lack of in-depth coverage of game design topics. The format that these books employ varies, but a typical chapter will describe a broad aspect of game design, such as character design, from a high-level perspective.

An important feature of these books that sets them apart from books on design skills or industry methods is that they do little but simply describe aspects of game design. To illustrate using the previous example of character design, a book on design skills might suggest techniques to design a character that is both memorable and engaging to the player and a book on industry methods might highlight the process that professional character designers go through in order to design marketable and identifiable characters. In contrast, a book on game elements might merely list traits (such as gender, occupation, and abilities) common in game characters.

Two particularly egregious examples of this type of book are Perry and Rollings/Adams. The former is little more than a collection of lists punctuated by very brief descriptions of techniques such as brainstorming and business models. Virtually every chapter contains a (frequently bullet pointed) list of elements (such as weapon types, occupations, and clichés). The entire second half of the latter book consists of a list of different game genres, making it the most obvious example of this type of book. Although these two examples are abnormally

bloated with questionably useful information, they are symptomatic of the "quantity over quality" aspect that is characteristic of this category.

What is important to note about game element books is that they offer very little helpful information or advice for readers interested in game design. Even industry process books are useful to an enthusiast in that a reader can study the methods used by professionals and extrapolate from them by learning what techniques have proved successful in the industry. In short, these books bring nothing new to the table and offer little that a cursory search through Google or Wikipedia would not also provide.

3.2.2: "INDUSTRY METHODS BOOKS"

The most common type of game design books is one in which the author describes the process of game development from an industry perspective. These books commonly describe the role of different members of a professional game development team (such as designers and producers) and what aspects of the game development process are delegated to them. What makes this category distinct is that these books are not actually about game design. Although passing reference might be made to the role of the designer in a studio, these books largely focus on the process of organizing, building, and publishing a game.

Although game design enthusiasts will find little helpful information in these books, that is not to say that they are without merit. For a student or hobbyist who aspires to get a career in professional game development, books of this type offer insight into what challenges they might encounter and to what kinds of work they might be assigned. However, someone hoping to further their skills as a game developer might find their time and money better spent on a book more specifically tailored to their field of choice. Someone hoping to get advice about how to become a better designer, for example, should instead consider a book falling into one of the next two categories.

A noteworthy example of this type of book is Steve Rabin's *Introduction to Game Development*, which is unusually in-depth compared to others which fall into this category. Each section of the book is written by an expert in that particular section's field, offering detailed insight into every aspect of the game development process. Although the book offers valuable considerations for an aspiring game developer, it has very little in the way of practical or theoretical information. The value of this book, like others of its type, is in educating the reader about the game development industry. Someone hoping to find out how to program game AI, rig a 3D model for animation, or design a role-playing combat system should look elsewhere for practical advice.

3.2.3: "HOW TO BECOME A BETTER GAME DESIGNER BOOKS"

Books which describe how to design games constitute the minority of literature available on the topic of game design, which seems like a contradiction. The defining characteristic of this category is providing advice on how to become a better game designer. These books may or may not touch on the theory behind game design, but if they do, it will be in a broad, non-

specific sense; books which cover this topic in detail fall under the last category. Instead, these books offer an approach to learning game design, although these approaches vary widely.

Although there are few books which fall under this category, there is a substantial diversity in the viewpoints that they offer. Richard Rouse's *Game Design: Theory and Practice* approaches the topic by deconstructing successful games and analyzing their successes and failures. The book also contains interviews with noteworthy game designers such as Sid Meier, Steve Meretzky, and Will Wright, each of which provides insight into the reasons behind their decision decisions and how those decisions affected the final product. Although it offers case studies about what went right and wrong, what *Game Design: Theory and Practice* leaves desired is how to take an idea and actually design a game. Brenda Brathwaite and Ian Schreiber's *Challenges for Game Designers* takes a far more pragmatic approach: making the bold claim that the ability to design games is something which can only be learned by acquiring experience, the book provides a series of exercises designed to give the reader the experience necessary to sharpen their game design skills.

In spite of the diversity of viewpoints present in this category, a key aspect is still missing. *Game Design: Theory and Practice* teaches by example and *Challenges for Game Designers* teaches by forcing the reader to learn for themself as they undertake its design challenges, but neither address the central question: how do you design a game? The methods of explaining what has been done before and leaving the reader to pick it up as they go along are informative, but fail to directly answer the question. In spite of this, these books are useful to readers who want to know about game design specifically (as opposed to game development as a whole as the first two categories discuss).

3.2.4: "HOW TO ASSEMBLE GAMES BOOKS"

This category of books attempts to answer the question of how to design a game, although the answer the books provide may be unpalatable to some. Although books in this category have a lot in common with ones in the previous category, these books instruct readers specifically on how to design industry-friendly, publishable games. With a particular focus on marketing, recognizing target audience, and analyzing market trends, these books reduce game design to a mathematical process of designing a product for the goal of profit.

21st Century Game Design is the best example of this category of book. It systematically breaks down gamers into a number of target audiences, and examines how to best design a game to most efficiently achieve market penetration of a given group. It seeks to take a basic concept, and use that as a starting point to assemble a game piece-by-piece in the way that is appealing to the target demographic, with a focus on constructing a game that sells well, rather than a game that is fun. While fun games are good for sales, any enjoyment the game provides is simply a happy side effect of making a profitable game.

Although some readers with an interest in game design might find the approach these books takes unsettling, these books provide a valuable perspective into the industry and into how games are actually designed. Designers aspiring to get a job in the industry will find very practical and applicable information here. For hobbyists and enthusiasts, these books can still

provide a different take on the game design process, bringing attention to considerations that they might not have thought of otherwise.

3.2.5: "THEORY OF GAME DESIGN BOOKS"

Although there are multiple examples of books which fall under each of the previously mentioned categories, only a single book out of the ones selected for this project matches this one. Because of the lack of examples to draw upon for this category, no analysis of it can be performed; instead, a hypothetical set of traits will be proposed in hopes that authors will fill the vacuum. Why create a separate category for a single book? Before starting the research, we predicted that the surveyed literature would fall into two categories: books about game design from a pragmatic perspective and books about game design from an academic perspective. Although the former category was broken apart as the literature was analyzed, this category persisted due to a distinct difference from the others.

The defining trait of this category is its focus on the theoretical rather than practical aspect of game design. While there are books that talk about how to design fun games and books that talk about how to design marketable games, there are very few which talk about the theory behind game design itself. Katie Salen's and Eric Zimmerman's *Rules of Play: Game Design Fundamentals* does just this, exploring what defines a game and what constitutes play, among other fundamental topics which are neglected in most other works. Its detailed analysis of core concepts and exploration into why people play games makes it a must-read for anyone with an interest in game design.

One of the biggest surprises of this project was the lack of titles which fall under this category. In order for academic discourse about game design to take place, there must first emerge a common language of games. Perhaps now that the need for more insight into the realm of game design theory has been identified, more authors will step in to fill the gap and provide a theoretical framework upon which to build a more detailed discussion.

3.3: TEACHING GAME DESIGN

The initial goal of this project was to determine how game design should be taught. Although it is clear that there is no consensus on how to learn game design, there do appear to be common elements in the approaches taken by books in each category.

3.3.1: DIFFERENTIATING GAME DEVELOPMENT AND GAME DESIGN

A peculiar commonality between the first two categories is that they have little, if anything, to do with game design. It is important to note the difference between game design and game development as a whole. Game development is an umbrella term for the construction of a game from start to finish and includes design as one of its constituent elements. Confusion between the two is common, a problem exacerbated by books which use the terms interchangeably.

Keeping this distinction in mind, the five categories of game design books could be generalized into two larger classifications: books about game design (the last three categories) and books not about game design (the first two categories). This second category is important to keep in mind because the books which fall into it are commonly confused to be about game design, possibly because they are incorrectly labeled in order to exploit the ignorance of uninformed readers who may confuse the two.

3.3.2: LEARNING DESIGN

What is the best way to learn game design? Many books claim to be able to teach a reader how to design games but never address the central question. The fourth category suggests that game designs can be assembled by studying market trends and focus test results, but some may not be satisfied with this solution. Is there a single, reliable method for designing games without resorting to purely profit-driven design? No one seems to have an answer.

Challenges for Game Designers admits that there is no magic formula for designing games and suggests that the only way to design games is to design games. Although this may seem like circular logic, many of the book's challenges are simple enough that even someone with no prior experience with game design can attempt them and then apply what they have learned to more advanced exercises. *Game Design: Theory and Practice* suggests that by playing and deconstructing successful games, one can apply what lessons they learn to games of their own design, but never bridges the gap between theory and practice.

Although there is a diversity of opinions on the matter, there does not as of yet appear to be a consensus about how games should be designed. Whether this lack of a concrete answer is because no one has yet discovered it or because no such answer exists is presently unknown. As more books are written on the topic, perhaps we will come closer to an answer.

3.4: LITERATURE AND THE CLASSROOM

The state of game design education in the classroom roughly mirrors the state of game design literature. Whether it is a textbook that a teacher writes for their class, or a class based on principles expounded in a textbook, the two advance in parallel, and by looking at one we can gain insight into the other. The single most prominent trend that is found in game design literature is an overwhelming focus on industry methods and processes. This is not all that surprising, as the greatest concern for students of game design is most often becoming prepared for a career in the industry. This has the unfortunate consequence of causing game production to be emphasized over game design. Overall, the wealth of books concerning game production and the technical aspect of game development is met with a dearth of books about game design, and the effects of this can be seen in the focus of today's game design programs.

CHAPTER 4: RECOMMENDATIONS AND CONCLUSION

Depending on the audience, the "best fit" game design textbook varies. Based on our research, we have provided a list of recommended books for different audiences and the conclusions we have drawn about the existing literature and what needs should be addressed by literature of the future.

4.1: RECOMMENDATIONS

No one book can cover everything there is to know about game design. The ideal book varies depending on what motivates a person to read about game design. What follows is a list of recommendations for educators who want to assign reading to their students, for students who want to learn more about the field that they are studying, and for enthusiasts and hobbyists who have little or no past experience and want to get started with game design. In addition to recommendations for readers, this section will also propose what an ideal book for each target audience might be like.

4.1.1: FOR EDUCATORS

The ideal classroom companion book varies depending on the approach to game design that the course takes. For instructors who want to give their students practical experience designing games, then *Challenges for Game Designers* is an ideal choice which contains fun but challenging exercises that will encourage students to think outside the box. For instructors who want to educate their students about the underlying concepts behind games, play, and rules, *Rules of Play: Game Design Fundamentals* is irreplaceable and will provide students with a vocabulary to discuss principles of game design. Ideally, a combination of both books should be used to balance theory with practice and ensure students are well-rounded.

4.1.2: FOR STUDENTS

Students looking to expand their knowledge beyond the material learned in class should start with *Rules of Play: Game Design Fundamentals* for a theoretical background that will enable them to think about games abstractly. For a deeper look into the theory behind game design, students should consider *The Art of Game Design* for its unique examination of the psychological, narrative, business, and engineering aspects of the game design process. For further insight into how the industry works, students should consider *21st Century Game Design* to get an appreciation for consumer-oriented game design and to get a feel for the work they might be tasked with if given a design job in the industry. Although beginning to show its age (the book failed to predict the tidal wave of social game developers such as Zynga and Playdom and their novel methods of developing and playtesting games), much of the lessons it teaches are applicable even in the present state of the gaming industry.

For students with an interest in the history of the industry, any of Chris Crawford's books will provide a valuable look at how far the industry has come along with predictions for the future of the art (some of which have already come true). Additional consideration should be given to Richard Rouse's *Game Design: Theory and Practice*, which offers several first-hand accounts of the game design process from well-known game designers.

4.1.3: FOR ENTHUSIASTS

For someone looking to get started with game design, the easy-to-read *Challenges for Game Designers* is a perfect fit, balancing quick and easy-to-understand discussions about the principles of design with fun and challenging non-digital exercises that anyone, regardless of experience, can do. The lessons learned from *Challenges* apply equally to digital and non-digital games, offering plenty to programmers and non-programmers alike. *Chris Crawford on Game Design* has applicable advice for individual and small group-based game design as well as a number of anecdotes from which an enthusiast could stand to learn. Finally, for those looking to expand into the theoretical side of design, consider the books recommended to educators and students.

4.2: CONCLUSIONS

As the field of game design gains increasing acceptance in the world of academia, the number of books written on the topic continues to increase. Much of what is currently considered to be game design literature simply has little to do with game design and offers little information of value for someone seeking to learn more about the topic. Unfortunately, the majority of the books available fall under the first two categories, making it very difficult for a would-be reader to find a book to fit their interests. When quality books are such a rarity, how can anyone break into game design without formal education or experience? With today's state of game design literature, the only hope a prospective designer has of becoming educated in the field is to enroll in a game design program and hope for the best. Unfortunately, because surveying the state of game design education is prohibitively difficult, the effectiveness of these programs cannot be determined, so a prospective design student has as little to inform his choice of schools as he does his choice of books.

The market is flooded with a glut of game element and industry method books. An author intending to write a book about game design should carefully consider for which category they intend to write and, if writing for one of the first two categories, reconsider whether or not another such book is really necessary. Instead, what we need are more books which dare to bring something new to the table of game design academia. What we need are fewer books like *David Perry on Game Design* and more like *Rules of Play: Game Design Fundamentals*. The latter provides us with a vocabulary and registry of theories derived from an amalgamation of other authors. Although very useful as a reference guide to the current state of affairs for the theory of game design, it does little to propose new concepts or challenge the status quo. Only

by questioning and challenging the accepted theories can a meaningful dialogue take place and allow the field as a whole to bloom into a proper field of academic study.

Educators seeking literature to use as assigned reading in their courses should carefully consider what role they want the textbooks to serve in their course. Be aware that many textbooks have little to offer and if students hate anything more than spending a lot of money on books, it would be spending a lot of money on books from which they learn nothing. Practical courses might consider complementing their students' project work with a theoretical perspective such as the one offered by *Rules of Play* and theoretical courses might assign reading from a practical book such as *Challenges for Game Designers*.

If the assortment of writers whose work was studied for this project agree on one thing, it would be that textbooks, at least as they are now, can at best serve a supplemental, peripheral role in game design education. Most authors agree that the best way to become a game designer is to practice game design, whether that practice is found in the classroom or in hobbyist work. Although people hoping to get a job in game design can gain valuable insight into the history of the industry and what their job might consist of in the future by reading these books, nothing can take the place of practice. Until a new book comes along which challenges our perspective on the process of game design and answers the question of how to design games, literature should continue to play a secondary role in game design education and readers should be wary of on which books they spend their time and money.

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APPENDIX A: E-MAIL SURVEY

Question 1
What are the goals of your course? What should each student learn or experience by the course's end?

Question 2
Which textbooks do you use or assign?

Question 3
What assignments or projects do you give your students?

Question 4
What level of background do you expect students to have coming into the course?

Question 5
What programs, engines, or tools do you use in the process of teaching game design?

Question 6
In what ways, if any, are those programs/engines/tools lacking? What limitations do they have?

Question 7
What features or functionality would a theoretical ideal tool for teaching game design have?

APPENDIX B: FORM

SURVEY

Game Design Education Survey

Survey for WPI qualifying project, advisor Brian Moriarty (bmoriarty@wpi.edu).
Written by Michael Miranda, Bishop Myers, Beth Hankel (mmiranda@wpi.edu, bmyers@wpi.edu, hankel.squared@wpi.edu)

Name:

Job Title:

School or Institution:

What grade level is the course designed for?
(Initial course if part of a sequence)

- 1st year
- 2nd year
- 3rd year
- 4th year
- Graduate

What level of programming background do you expect students entering your course(s) to have?

- None
- Basic
- Advanced

What level of art background do you expect students entering your course(s) to have?

- None
- Basic
- Advanced

What overall level of game design background do you expect students entering your course(s) to have?

- None
- Basic
- Advanced

What are some of the learning outcomes of your course(s)?

Which textbook(s) do you use in your course(s)?
(Check all that apply)

- [ ] Andrew Rollings and Ernest Adams on Game Design (Ernest Adams, Andrew Rollings)
- [ ] Challenges for Game Designers (Brenda Brathwaite, Ian Schreiber)
- [ ] Chris Crawford on Game Design (Chris Crawford)
- [ ] Game Design Workshop (Tracy Fullerton)
- [ ] Game Design Foundations (Roger Pedersen)
- [ ] David Perry on Game Design (David Perry)
- [ ] Introduction to Game Design (Steve Rabin)
- [ ] Game Design: Theory and Practice (Richard Rouse III)
- [ ] Rules of Play: Game Design Fundamentals (Katie Salen, Eric Zimmerman)
- [ ] The Art of Game Design (Jesse Schell)
- [ ] None
- [ ] Other:

What type(s) of assignments do you give students in your course(s)?
(Check all that apply)

- [ ] Individual design projects
- [ ] Group design projects
- [ ] Non-digital design exercises
- [ ] Digital design exercises
- [ ] Writing design treatments
- [ ] Writing full design documents
- [ ] Creating non-digital prototypes
- [ ] Creating digital prototypes
- [ ] Critique of existing games
- [ ] Critique of games in progress by other groups
- [ ] Completing and polishing a full game

If you wish to indicate a project not listed above, or if you wish to give further description about one of the above assignments, please do so in the box below:

What programs/engines/tools do you use to help teach your course(s)?
(Check all that apply)

- [ ] Adventure Game Studio
- [ ] Aurora Engine (Neverwinter Nights)
- [ ] Blender Game Engine
- [ ] C4
- [ ] Flash
- [ ] Flixel
- [ ] Game Maker
- [ ] Gary's Mod
- [ ] Inform 6/7
- [ ] Multimedia Fusion
- [ ] RPG Maker
- [ ] Second Life
- [ ] Source Engine
- [ ] Unity3D
- [ ] Unreal Engine
- [ ] Wintermute
- [ ] Custom Built Tool
- [ ] Other:

What programming/scripting languages do students utilize in your course?
(Check all that apply)

- [ ] C/C++
- [ ] C#
- [ ] Java
- [ ] JavaScript
- [ ] ActionScript
- [ ] Lua
- [ ] Python
- [ ] Ruby
- [ ] Objective C++
- [ ] Other:

In what ways do those tools fall short? What limitations do they have?
(Check all that apply)

- [ ] Graphics
- [ ] Project Portability
- [ ] Collaboration Issues
- [ ] Over Specialized
- [ ] Cross Platform Restrictions
- [ ] Interface
- [ ] Learning Curve
- [ ] Extendability
- [ ] Programming/Scripting Engine
- [ ] Licensing/Cost
- [ ] Other:

What features/functionality would you want to see in an ideal game engine geared toward education?

What features/functionality would you want to see in an ideal game engine geared toward education?

If you have any additional thoughts or information you think might be pertinent, please enter them in the box below.

We appreciate your taking the time to complete this survey.

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