

Michael SWEET

FREE SAMPLE CHAPTER











Praise for Writing Interactive Music for Video Games

"Behind every great game experience is an interactive score that defines the emotional through-line of a game. Writing Interactive Music for Video Games will show you how to create such a score, from basic concepts to sophisticated techniques. It is filled with advice from some of the greatest video game composers working today, and written with the clarity and insight that comes from experience."

—Tracy Fullerton, Director, USC Game Innovation Lab

"Michael Sweet's book provides a much-needed text that walks a composer through all of the critical considerations when first starting to work in the video game industry. Not simply a 'how-to' but a 'why-to' that dives deep into the aesthetics and best practices of writing an interactive score. Through his years of work in the industry and years of teaching, he is able to bring together a comprehensive discussion on composing interactive scores. Professor Sweet brings together the nuts and bolts, the business, and pertinent historical moments—all while setting composers' expectations for working in the industry. There is no better book to be found if you are a composer looking to understand writing for games."

—**Jeanine Cowen,** Vice President for Curriculum and Program Innovation, Academic Affairs, Berklee College of Music

"Michael Sweet demonstrates a formidable depth and breadth of knowledge related to adaptive music. He adroitly covers both the creative and technical components critical to being successful in this field. This book is a must-read for newcomers and experienced composers wanting to learn more about the art of video game composition."

—Chuck Doud, Director of Music, Sony Computer Entertainment Worldwide Studios

"Clear, complete, concise, and filled with vital information. This is a must-read for any composer serious about scoring for games. If you want to know what makes game music unique, look no further; this book will take you to the next level!"

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"The processes and techniques for composing for games has typically been a black art of strange terms and byzantine processes. Writing Interactive Music for Video Games uncovers the issues you have to deal with when composing music for games and presents them in an easy-to-understand way, from the creative and technical issues to making bids and dealing with contracts. An excellent resource for both the professional and aspiring composer, this book should be on the shelf of anyone interested in writing music for games."

—**Brian Schmidt**, Executive Director, GameSoundCon, and President, Game Audio Network Guild

"Michael Sweet has written a thorough and comprehensive guide for any composer or audio professional wishing to understand the technical and creative aspects of scoring video games. Students and professionals at all levels will find this book valuable and well worth reading."

—**Garry Schyman**, Composer, *Bioshock* series, *Middle-earth: Shadow of Mordor, Dante's Inferno*, and *Xcom: The Bureau Declassified*; and Adjunct Professor, USC's SMPTV Program

Writing Interactive Music for Video Games

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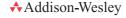






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Writing Interactive Music for Video Games

A Composer's Guide

Michael Sweet

★Addison-Wesley

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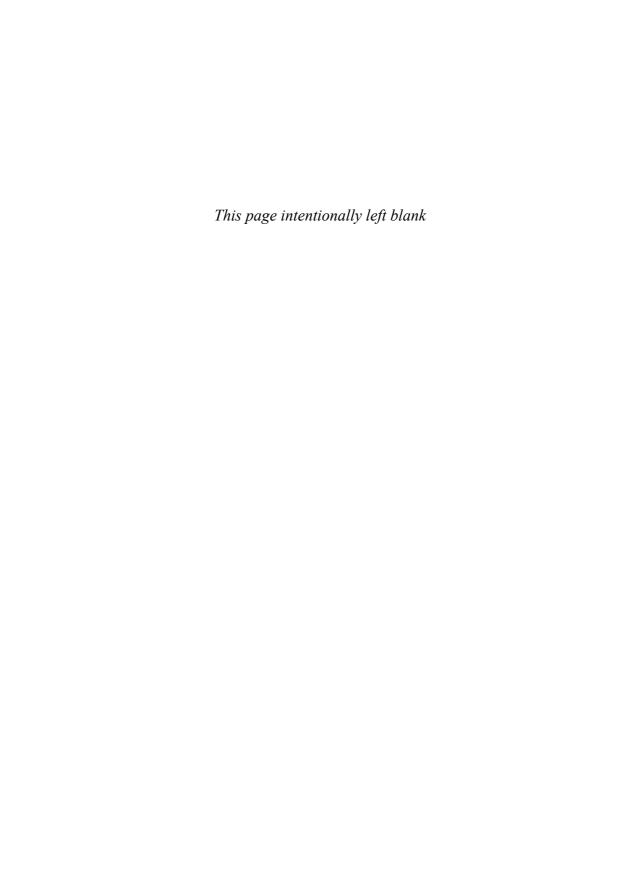
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Compositor

Compositor Shepherd, Inc. I dedicate this book to all my former, current, and future students, who continue to surprise me every semester with their talent and ability to teach me equally about life, music, and supporting one another.



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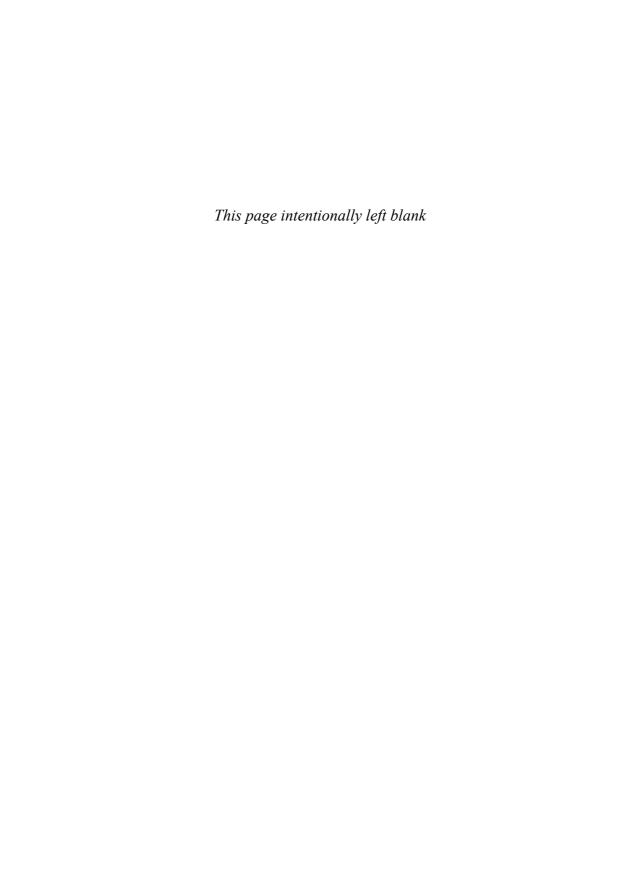
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About This Book

When I first meet new students every semester, I tell them how difficult the music industry can be. Many of the friends with whom I went to music college many years ago are no longer in the music industry. To me, the most important aspect of being a teacher is to pass on all the knowledge that I have gained about the music industry to enable my students to be successful. I want to improve their odds of being in music decades after they graduate. This book is an extension of those ideas. I've tried to assemble much of the experience and knowledge that I have learned as a professional video game composer in hopes that I can help others become successful composers. I believe that our collective wisdom will help shape future generations of composers, allowing music to get even better.



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I have many people to thank for helping me develop and write this book. Without my editor at Addison-Wesley, Laura Lewin, there would be no book at all. Her encouragement, support, and commitment helped me believe that I should write this book. At many points during the writing process, I suggested to her that it would be much easier for me to just write a piece of music. Luckily for you and me, she didn't accept this offer, and now you hold this book in your hands. Many additional people at Addison-Wesley contributed their talents to this book by helping to connect my ideas together, politely keeping me organized and on task, and correcting a crazy amount of grammatical errors. Special thanks to Olivia Basegio, Stephane Nakib, Elizabeth Ryan, Michael Thurston, and everyone else at Addison-Wesley, and to freelancers Anna Popick and Jill Hobbs.

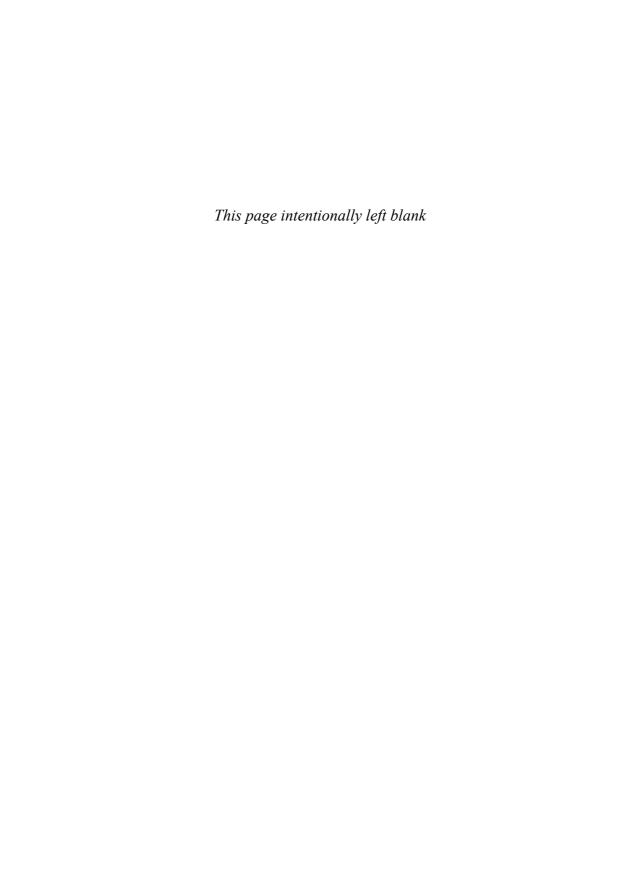
My enormously talented and experienced technical editors, Brian Schmidt, Paul Lipson, and Chuck Doud, were the first to read the book. They offered sage wisdom and advice to make this book much better than I ever imagined.

I'd also like to thank all the incredible composers who contributed sidebars to this book, including Yoshino Aoki, Vincent Diamante, Ben Houge, Noriyuki Iwadare, Akari Kaida, Laura Karpman, Yuzo Koshiro, Bear McCreary, George "The Fat Man" Sanger, Tetsuya Shibata, Yoko Shimomura, Rich Vreeland, Duncan Watt, and Guy Whitmore. Special thanks to Shota Nakama, founder of the Video Game Orchestra, and Maho Azuma for coordinating and translating the contributions from Japanese composers.

Additional thanks go out to Peter Bufano and his expert knowledge in the craft of scoring music for circuses. Thanks also to my friends Eric Zimmerman and Tracy Fullerton for continuing to believe in, support, and evangelize my music over the last 20 years.

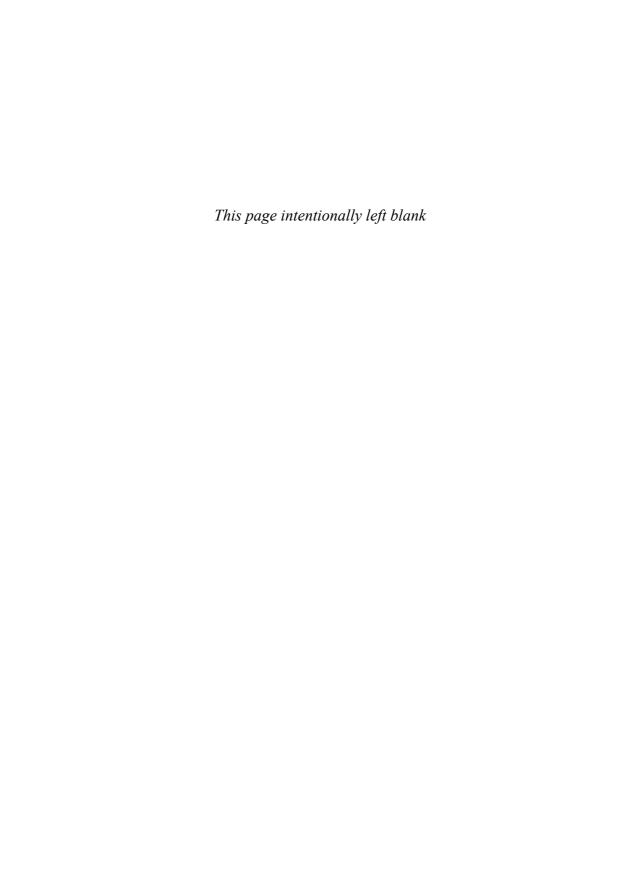
Berklee College of Music gave me the opportunity to come to Boston in 2008 to create its video game scoring curriculum. This adventure helped me build on my professional experience by allowing me to spend time analyzing many video game scores, giving me the opportunity to talk with myriad talented composers, and enabling me to develop curriculum and resources for students. Thanks to the many talented and supportive individuals at Berklee, including Jeanine Cowen, Dan Carlin, Alison Plante, George Clinton, and Kari Juusela, for helping to guide and support the game scoring programs.

Last, I'd like to thank my family, Robin and Lucas, for believing in me and loving me every day. You inspire me to become a better person and help me laugh at myself. Thanks to my mom and dad for continuing to support everything that I've ever done, without an ounce of criticism, only with love.



About the Author

Michael Sweet leads the development of the video game scoring curriculum at Berklee College of Music. For the past two decades, Michael has been an accomplished video game audio composer and has been the audio director for more than 100 award-winning video games. His work can be heard on the Xbox 360 logo and on award-winning games from Cartoon Network, Sesame Workshop, PlayFirst, iWin, Gamelab, Shockwave, RealArcade, Pogo, Microsoft, Lego, AOL, and MTV, among others. He has won the Best Audio Award at the Independent Games Festival and the BDA Promax Gold Award for Best Sound Design, and he has been nominated for four Game Audio Network Guild (GANG) awards.



INTRODUCTION

Have you ever wondered what goes into creating a music score for a video game? Scoring music for games is very different than composing music for other linear media like film and television. This book aims to teach you how composers work with game development teams to create interactive music scores in an effort to make better games.

Welcome

Many of today's video games use numerous interactive music techniques to adapt to how the player drives the action in real time. Video game music changes dynamically based on decisions that a player makes. The composer must score multiple outcomes and be able to transform the music from one emotional state to another seamlessly.

This book will teach you the fundamental music approaches and skills that professional composers use to create these interactive scores for games. This book focuses on these game scoring techniques from conceptualization, to creation, to implementation, through to the game's release. Using numerous examples, we'll examine each technique in depth, and then compare and contrast the various techniques.

This book illustrates these techniques as used in video game scores and assesses their effectiveness. Readers will also gain insight into fundamental concepts by evaluating historical perspectives on interactive composition. This book serves as a gateway for discovering innovative interactive music throughout the twentieth century, exploring numerous scores with applications for modern video games. These scores can be a jumping-off point for inspiring and developing your own compositional strategies.

In addition, readers will learn about the business aspects associated with being a music composer for games. This coverage includes marketing and sales advice, explanation of typical contract language, ways to price music services, the challenges of pursuing this career, and strategies to break into the industry.

When I first began composing music for video games more than 20 years ago, it was difficult to imagine a time when students entering college would want to learn the craft of composing video game scores because it was such a small field. Now, some of the world's leading contemporary music institutions are teaching video game scoring to their students.

How did we get here? In this introduction, we take a quick look at the game industry and see how it relates to music scoring for games.

Games and Popular Culture

Video games have been evolving for many decades. As we approach the fiftieth anniversary of the first video game with sound (*Pong*, 1972), contemporary video game scores are now being played by many of today's elite orchestras. Live showcases of orchestral video game music like *Video Games Live* and *Final Fantasy: Distant Worlds* sell out concert venues around the world to young audiences who have grown up playing video games.

Fundamentally, video games are another medium through which we express ideas and tell stories to one another. As with the best storytelling, we are able to share similar experiences in the same way that film, television, and the arts have brought us new perspectives by allowing us to relate to one another.

3

From colossal AAA (pronounced "triple-A") games played on consoles like the Xbox, Play-Station, and Wii, to casual games played on handhelds and social networks, the diversity of audiences that play games is enormous. Video games no longer exist only on the fringe of society, but rather have become an integral part of mainstream and popular culture. In 2014, according to the Entertainment Software Association (ESA), there were some remarkable statistics on the diversity of gaming:

- Approximately 58 percent of Americans play video games.
- The average game player is 30 years old and has been playing games for more than 13 years.
- Approximately 25 percent of people older than the age of 50 play video games.
- Nearly 45 percent of all game players are female.

For people involved in game development, this diversity allows teams to create games in many different genres that appeal to a wide range of audiences. Composers and music teams have the opportunity to specialize in myriad musical styles, ranging from kids' music (*Lego Universe*, 2010; *Minecraft*, 2009), to jazz (*Grim Fandango*, 1998; *L.A. Noire*, 2011) and orchestral scores (*Bioshock*, 2007; *Dead Space*, 2008), to world music (*Prince of Persia*, 2008; *Uncharted: Drake's Fortune*, 2007) and historically inspired music (*Assassin's Creed III*, 2012).

At the time this book was written, games were producing global revenues of approximately \$60 billion each year. The size of these revenue streams, along with the explosion of popularity of video games in modern society, creates many opportunities for composers and musicians to create music for games. A typical game budget for a console game might run from a few million dollars to \$50 million or more. Budgets for music and sound typically represent 5 to 10 percent of the overall production budget for the game. As a consequence, a sizable amount of money may be spent to create music for games.

Contemporary video games have an enormous reach in culture and society. They can provoke broader discussions about life and culture, including relationships (*Papa Y Yo*, 2013; *Braid*, 2009), life (*The Sims*, 2008; *Passage*, 2007), discovery (*Mass Effect*, 2007; *Journey*, 2012), and music (*Chime*, 2010; *Rez*, 2001).

Over the past several years, games have also evolved into an art form. Shows featuring video games have popped up at some of the nation's leading art museums, including "The Art of Video Games" at the Smithsonian (*Myst*, 1993; *Flower*, 2009) and "Applied Design" at the Museum of Modern Art (*Katamari Damacy*, 2004; *Portal*, 2007).

Many of today's games also turn players into content creators by giving them the tools needed to create their own game content (examples include *The Sims*, 2000, and *Little Big Planet*, 2008). Players are able to express their own creativity, stories, and ideas through games. In the same way that narrative forms like film and television are being remixed and recombined on YouTube, so games are becoming a means of expression—a trend that has wide cultural

implications. Musicians and composers can also take advantage of our mash-up and mod-ing culture by placing their own music into games to tell their own stories.

Scoring for Games

Writing music for games relies on many techniques inherited from dramatic film scoring, including harmonic development, cadences, non-song-form-based music development, and themes. But, as you'll learn in this book, video game music differs significantly from the music found in linear media such as film and television.

Many contemporary video games use numerous interactive music techniques to adapt to the player in real time. Video game music changes dynamically based on the decisions that a player makes. For example, the game player might have the choice to sneak around an enemy using camouflage or enter into a fight with guns blazing. The music that accompanies this scene should adapt to the choices made by the player. In turn, the composer must score these multiple paths with several music cues that are able to transform from one cue to another in a seamless fashion.

Music teams working on a game can range in size from a single individual who composes all the music to a huge team of people that may include a composer, an audio director, editors, an orchestrator, programmers, and implementers. Whether you're working on a small iPhone or Facebook game, or a large AAA PlayStation title, this book teaches you about the different kinds of interactive scoring methods that will be available to you. We'll explore the creative, methodology, technology, and business issues associated with the creation of the score for all these types of games.

Although many games use the techniques outlined in this book, choosing to use interactive music in a game is a complicated decision that takes into account many different factors, including the overall music budget, programming resources, and investment of the time it takes to create and implement an interactive score. Also, there may sometimes be a lack of understanding of how interactive scores work within games.

This book informs readers about their choices regarding the creation and implementation of music interactivity in their games. It shows how interactive music can enhance storytelling in games as well as improve the overall game experience.

You'll learn the fundamental music approaches and skills that professional composers and game development teams use to create interactive music for games from the initial stage of conceptualization and creative direction of the music, through to the composition and creation process, until the final implementation of the music into the game. Important concepts you'll learn about in this text include the following:

- Music conceptualization and creative direction
- Music critique and analysis

- Interactive music
- The composition process
- Music production
- Audio implementation
- The business of creating music for games

Intended Audience

This book is intended for a variety of audiences, from novices to experienced professionals, who are interested in how they can improve the music in their games. Whether you're a game designer looking to understand how music works in your game or a composer looking to understand interactive techniques for video games, this book will help you discover the innovative processes involved in the creation and integration of music into games.

All readers will gain insight into what makes a great music score through examples. This book also teaches you how to listen to current games so as to better understand how the music is implemented; such greater appreciation will allow you to broaden your game music knowledge and listen more critically. This will, in turn, help add depth and innovation to the design and implementation of your own scores.

Readers will walk through every step that goes into the creation of a score, from the score conceptualization phase all the way through implementation and release of the video game.

One of the goals in writing this text was to help the individual teams working on a game collaborate to create the best score and music implementation for their game. Once an entire team understands how interactive music works, it becomes easier to use music to its full potential.

Game Development Teams

From a design perspective, game development teams will acquire a broader understanding of how music can shape and enhance the overall mood and feel of their game. In turn, they'll learn about how music systems work within games to augment the player's experience. They'll also take away ideas about how game mechanics can be used to control the music score within their game.

In game production, producers need to know what the music costs and which best practices can ensure efficient music design in a game. This book discusses the assets and costs associated with the production and implementation of various interactive music techniques. The coverage provided here gives producers a better understanding of music production processes for a game.

Programmers will discover the best ways to collaborate with composers by learning how to implement interactive music and how such techniques affect the audio physics of the game world. This book covers a variety of implementation options, ranging from basic techniques all the way through advanced implementation including middleware solutions.

Audio Teams

Musicians and composers will learn about fundamental and advanced interactive music techniques that will enable them to create their own interactive scores for games. In addition, they'll gain an understanding of the business acumen that is required to break into the world of game audio. Professional composers who are already working in video games or looking to enter into the video game industry will find this book a valuable resource, as it shows techniques and examples of methods that are currently being used in video game scores.

Sound designers and audio directors will also be interested in this text, as it will teach them about music techniques and explain how those techniques relate directly to their own fields. By better understanding how music engines work, they'll gain a broader perspective on the entire sonic landscape that makes up the game. In addition, some of the interactive music techniques can be applied directly to sound design.

Game Players

Fans of game music will gain a greater insight into the creation process that many composers use to score video games. Once you've read through the techniques described here, you'll be able to hear music in games differently—that is, you'll be able to identify different musical structures and listen to the "music mechanics" of games. In addition, you'll be able to hear links between your actions in the game and appreciate how these decisions are reflected in the music of the game.

Structure of the Book

This book is structured in such a way as to allow readers of different backgrounds to quickly grasp the basic concepts of designing music in games, then continue on to explore fundamental and advanced scoring techniques. As you read through this book, you'll find that each chapter builds on the concepts discussed in the previous chapter.

Each chapter begins with an overview of the chapter. It then expands on the topics covered by explaining techniques through specific examples used in video game scores and offering tips to assess their effectiveness.

Throughout the book, you'll find suggested exercises that put the techniques described in the book into practice. After each chapter discussing a specific game scoring technique, there is an

"Exercises" section in which game audio scenarios challenge readers to write or edit their own music to see how it works.

At the end of each chapter, concepts and techniques are reinforced with a review, followed by sample exercises.

This book is augmented with a series of software tools specifically created to accompany this text. The fundamental interactive techniques described in this book are reinforced by this software, which seeks to help composers simulate how their music might work in a game. These indispensable tools help readers learn each technique in turn, so they can better understand the pros and cons of each compositional method.

The companion course website (see page 426) also includes suggested lesson plans to help use this book as a teaching tool in higher learning institutions.

The chapters in this book are organized into five parts. What follows is a detailed overview of each section of the book and its learning outcomes.

Part I: Scoring for Games

In the first part of this book, you'll explore the language of storytelling through music in games, and break down the basic ways to approach game scoring. We begin with an overview of how music for games is conceptualized, including interactive music methodology and creative decisions regarding how a score is created for a game. This material doesn't require you to have a music composition degree, but rather is a top-down overview of the terminology and the thinking that goes into building a score.

Topics include how to analyze a game for musical opportunities, develop thematic ideas, apply basic integration and synchronization of music to game events, think about control inputs and triggers, and perform game score analysis. In addition, Part I explores how game genres affect music choices.

Last, you'll learn about historical perspectives on interactive music in video game composition and about composers in the age of post-modernism. You'll explore the history of interactive music and the different techniques that helped composers implement their scores.

Part II: Fundamental Video Game Scoring Techniques

As the book progresses, you'll dig deeper into how these scores are actually written and learn interactive scoring best practices and various implementation techniques. Composers and students will receive practical advice on composing multiple types of interactive scores for video games, including coverage of video game music analysis, historical perspectives, methodologies, and future trends in music for video games.

In Part II, we break down the fundamental interactive scoring techniques found in games. We show you how to write effectively in each of the different interactive music models and how to manage game considerations that influence which model to use. Among the techniques we'll focus on are horizontal resequencing, vertical remixing, transitions and stingers, and use of music as a gameplay element.

Every fundamental technique is explained and reinforced with case studies from real games. Readers will be able to enhance their composition skills with an understanding of how to create interactive-based music and best practices for each technique.

Part III: Advanced Video Game Scoring Techniques

Part III delves into advanced video game scoring methods, including the use of virtual instruments within games, real-time tempo and harmonic variation, aleatoric methods, and algorithmic techniques. This section is primarily intended for advanced composers and implementers looking to augment basic music techniques in their games.

In addition, Part III looks at the current generation of audio middleware tools that composers often use to implement advanced scores and that offer fewer of the programming challenges associated with building your own music engine. Figure 0.1 shows an example of the audio middleware tool Fmod with some interactive music that was written for a game level.



Figure 0.1 Fmod is an example of audio middleware software implemented to play interactive music.

Part IV: Bringing Music into the Game

Continuing into Part IV, we focus on the actual technology associated with both the writing and the implementation of music in the game. We explore the digital audio workstation (DAW), notation and recording for games, file formats, creation of virtual instruments for games, collaborative tools, and audio middleware for games.

This section is meant to complement Parts II and III by going beyond the conceptual language and getting into the practical side of creating an interactive score using your DAW. It also explains the entire process, from setting up for recording live musicians to implementing the music within the game.

Part V: The Business of Scoring Music for Video Games

In Part V, readers will find chapters detailing the business of being a composer for video games. Topics covered include pricing, contracts, negotiation, sales and marketing, the challenges of working as a composer, and strategies to break into the industry. You'll learn about the noncreative skills that are required to be a successful composer and see how to develop those skills.

The business chapters of the book do not rely on the same foundational material in earlier parts of the book. Consequently, they can be read at any time.

Part VI: Conclusion and Appendixes

In the conclusion, you'll find closing thoughts as well as an analysis of future trends in video game music. The appendixes contain useful information including a glossary and additional reference material, along with recommended organizations and groups.

Digital Tools

Included with this book is a set of software tools that demonstrate fundamental interactive scoring techniques. These tools can be found at the book's companion website (see page 426). With these tools you'll be able to take music that you create in a DAW and simulate how it might operate in a game. Throughout the book, we'll point out how to use these tools to better reinforce the concepts you're reading about.

These digital tools will help you compose and test your own interactive compositions. In addition, they allow composers and producers to play interactive music for game developers before that music has even been implemented in the game, thereby demonstrating how the music might work in tandem with the game's action.

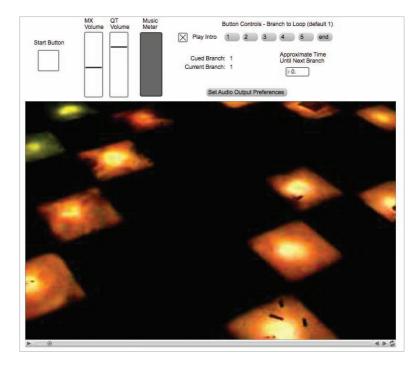


Figure 0.2 The Branching Engine Music Tool, which is one of the tools included with this book to help compose interactive music.

When a composer is writing interactive music, it's very difficult for the composer to show a game design team what the music will sound like in the final game because it may take weeks for the programmers to implement the score. The included software tools allow game designers to hear the interactive music a composer has written before it is programmed into the game (Figure 0.2); they can use this information to make creative decisions about the music faster and get a more complete picture of what the final product will sound like. Many hours have been spent putting these tools together so that composers can concentrate on creating great music instead of getting hopelessly bogged down in figuring out a way to play their music for the game designers.

Companion Website

This book's companion website contains a variety of useful information, including web links to many gameplay examples from the text as well as updates and errata for the book. Throughout the text we'll show interactive techniques in action through examples used in actual games. The companion website provides links to gameplay videos showing these examples. Also available on the course website are example projects using the fundamental interactive music techniques found in audio middleware engines such as Fmod and Wwise. See page 426 for information about accessing the site.

Conventions Used in This Book

Several different elements are used to enhance your learning in this book. This section provides examples of what they indicate.

note

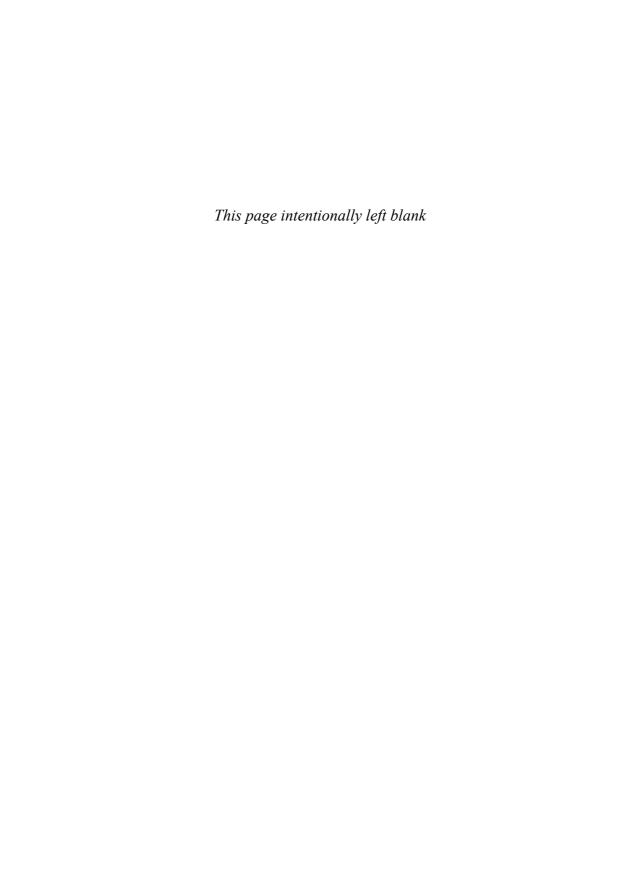
A note provides additional clarification or information about a concept.

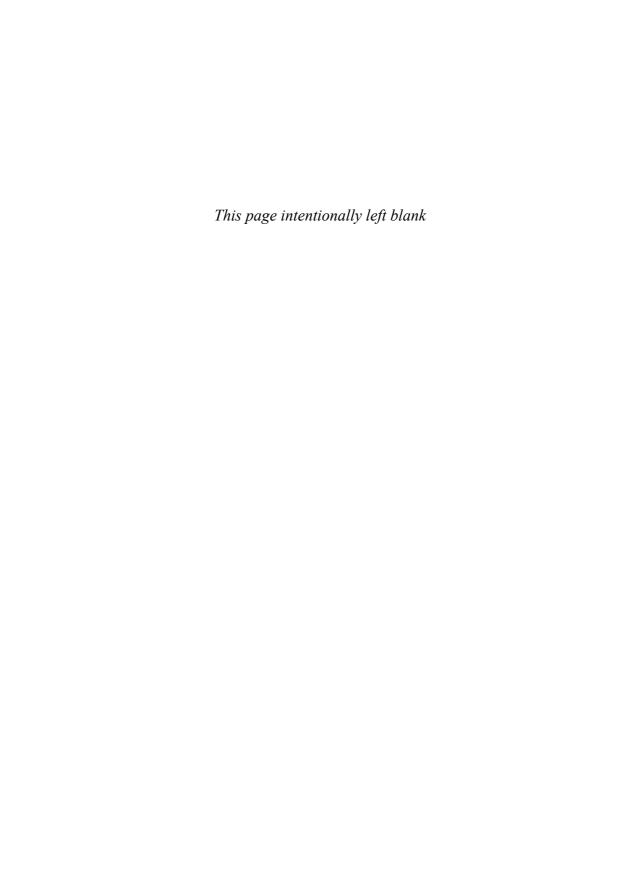
warning

WARNINGS LOOK LIKE THIS A warning gives you a heads-up about ways to avoid problems.

tip

A tip gives you specific hints or advice about putting techniques into practice.





THE LANGUAGE OF MUSIC STORYTELLING IN GAMES

In this chapter you'll learn about the language of music storytelling in games and basic approaches to game scoring. Beginning with an overview of how game music is conceptualized, you'll understand the methodology to make the best creative music choices for your game. This material doesn't require you to have a music composition degree, but rather is a top-down overview of the fundamental processes and terminology that drives the creation of a game score. You'll learn about game music types, music functions within a game, and the building blocks for critical analysis of interactive scores.

What Makes a Video Game Unique?

To build a language to use when describing video game music, it's important to understand some of the unique characteristics of the medium of video games. This chapter begins by breaking down the anatomy of a video game, comparing and contrasting elements to linear media. These differences affect how the music is conceptualized, composed, and synchronized to work within a game.

There are several key differences between scoring for linear media like film and scoring for video games. If we look at a direct comparison between films and games, as you'll see in Table 1.1, you'll begin to discover and identify some of these key differences.

Passive versus Active Interaction

Video games require the player to be actively involved so as to make decisions based on the action that is occurring on screen. This active interaction is the most important element that distinguishes the medium. Players are actively involved in determining the outcome of a game, whereas in linear media like film there is no interaction; instead, viewers watch passively.

This interaction between player and story in video games creates a reactive feedback loop, with each one affecting the other. The level of interaction is determined by the rules and mechanics of the game and is usually controlled by the player through a game controller or a keyboard/mouse combination.

This active interaction between the game and the player also affects how the music must change and react to player decisions. The music must be written in such a way that it is adaptable based on the player interaction. Throughout this book you'll learn about different ways to compose adaptive and interactive music compositions for video games.

Attribute	Film	Console Game
Type of experience	Passive watching	Active interaction
Average length	2 hours	10+ hours
Number of plays	Usually once	Many times
Structure	Linear: one beginning, one mid- dle, one end	Nonlinear: multiple outcomes and evolving storylines
Average amount of music	1 hour	2–3 hours

Table 1.1 Key Differences between Films and Games

Game Type	Play Experience	Average Amount of Music
Casual game	2–3 hours	15+ minutes
Console game	10+ hours	2–3 hours
MMORPG	50+ hours	15+ hours

Table 1.2 Length of Music in Games

Variable Length of Experience

Length of the gameplay experience is one of the most important aspects in determining the amount of music that must be conceived and written for a game. Video games vary greatly in the length of experience compared to film. Furthermore, each game genre has a length that is most suitable for the style of play, whether it's puzzle solving in a game like *Myst* (1993) or defeating an alien invasion in a game like *Halo* (2001).

Casual games (*Tetris*, 1984; *Bejeweled*, 2001; *Diner Dash*, 2004) that are played from beginning to end might be only 2 to 3 hours in length, whereas a massively multiplayer online roleplaying game (MMORPG) like *World of Warcraft* (2004) might have a play experience totaling more than 50 hours. Typically AAA (pronounced "triple-A") console titles for Xbox or PlayStation have a play experience that lasts 10 or more hours.

Table 1.2 summarizes the differences in the length of play between different game types.

The time it takes to play a game depends on many different factors, including length of the story, game variability, and the experience of the player. These additional factors are discussed throughout the chapter. In some very large games, players sometimes play for as much as 20 to 30 hours per week!

Many games today also have expansion packs that allow the game to grow by extending the player experience with new storylines and additional content. These expansion packs may also increase the amount of music in a game. Popular games that include expansion packs include *Angry Birds* (2009) and *Bioshock: Infinite* (2013).

note

Game players from around the world play MMORPGs together on computer servers where they interact with one another in real time, helping each other with quests and battles. These games are massive in scope and take hundreds of hours to complete. Consider the scale of a game like *World of Warcraft* (2004):

■ The average *World of Warcraft* player plays approximately 20 hours per week.

- There is more than 23 hours of composed music within World of Warcraft.
- At the game's peak success, there were approximately 14 million subscribers, each paying a monthly fee of \$15 to play the game.
- The game development team that works exclusively on World of Warcraft consists of several hundred members, along with a team of audio professionals working on the music and sound.

Number of Plays

The play experience in games is significantly longer than the experience with most linear media. Consequently, players often don't finish games in one session. Instead, it typically takes many sessions for a game player to finish a game.

This has direct implications for the music. How do we approach the interruptions caused by players stopping and starting in our music? Is there a way to bring the player back into the story more seamlessly, reminding the player where he or she left off?

A composer can use several different approaches to enhance the storytelling in the game between interruptions. For example, composers often use thematic material to tie the story together by representing characters or places in their music. The "Music Conceptualization" section of this chapter discusses this in more detail.

warning

THE REPETITION PROBLEM George "The Fat Man" Sanger—a pioneer video game composer primarily known for his work on *Wing Commander*—is generally credited with the quote "Repetition is the problem" with regard to video game music.

You may have noticed in Table 1.2 that the play experience is typically far longer than the music can support. Video games in the past have been known for their repetition, and it's a problem to look out for when developing music for video games.

Composers are challenged by many constraints when working on video games, including memory, voices, and games growing in scope and size. Sometimes the music must be repeated within games because of one factor or another.

Composers must take this issue into account when creating their scores. To minimize music repetition in games, composers frequently look to interactive composi-

tion techniques. Modern composers have many more options for getting more mileage out of the score by using various interactive techniques that you'll learn about in this book.

Game Mechanics

In addition to a storyline, video games have specific game mechanics that make them different from film. These mechanics or rules define the play experience and dictate how the player interacts with the game system. For instance, in the early arcade game *Space Invaders* (1978), the basic gameplay mechanic is to shoot the impending alien march while avoiding getting hit by the enemy's lasers or having the aliens reach your home world. Put even more simply, the mechanic is about winning or losing a specific game level. The player's skill level determines whether the game continues or ends. Other examples of game mechanics include solving puzzles, taking turns, racing against a clock, beat-matching, and many more.

Game mechanics are a system of rewards and challenges that a player faces when entering the game. Game music systems need to be aware of game mechanics and, in turn, enhance the play experience by supporting these mechanics.

Pacing, Synchronization, and Flow

Video game players typically drive the storyline at their own pace. Players can move quickly or more slowly through a level, depending on their skill level. Since a composer cannot write a customized score for every individual player, he or she may instead write an adaptive score that takes the player's skill level and pacing into account. This way the composer supports the same emotional pacing for each player. For example, in an open-world game like *World of Warcraft* (2004), the player at any given moment may decide to go to places within the world like Elwynn Forest or Ironforge. These decisions affect which music will play and determine the transitions that happen to get us from one piece of music to the next.

Unlike in linear media, where a composer can synchronize the music to a specific frame number, the game storyline is driven by the player. Synchronization in music is achieved by following changes in emotional context. These changes then direct how the music might play, in the same way that a conductor cues the woodwinds in a symphony.

The interactive music system in a game can take into account many different factors besides location, including the player's health, proximity to enemies, various artificial intelligence (Al) state(s), the length of time the music has been playing, and so on. These variables can help change and adapt the music so it is synchronized to the events that unfold for the player.

Multiple Story Paths and Repeatability

When you watch a film, the experience is static—it doesn't change from viewing to viewing. In games, however, the narrative and dramatic arcs are based on real-time choices made by the player. This may mean that there are multiple story outcomes.

Because of this possibility, the music must follow the player's decisions throughout the game to support the emotional context for the scene or level at any given time. The music must change dynamically based on these decisions and conditions, which requires composers, music editors, and game designers to think differently when approaching the composition of the score. For instance, in the game *Mass Effect* (2007), the player makes decisions about which characters to support throughout the story. Characters that aren't supported may actually die during the game. Since these characters have musical themes attached to them, we need to be aware of how these themes are shaped and evolve over time based on the player's decisions.

When games have multiple outcomes, they can be played through multiple times. This increases the chance that a player might hear music multiple times. Many composers use the interactive music techniques outlined in this book to minimize the repetition. For example, one technique is to play back a music cue in a different order. A composer might also write multiple introductions to the same piece of music so the player will hear it begin differently each time it plays. More of these techniques will be reviewed in later chapters of this book.

Technology

Composing for video games is ostensibly reliant on the underlying technology used to play back music within the game. Hence interactive music systems are tied to advances in this technology. Composers who are interested in creating music for games need to be fearless when it comes to learning about new technology because they are often asked to learn a new music format while they are writing in it.

Mobile and web games typically have greater memory and voice constraints than console games, making composing for these platforms very challenging. Conversely, a game like *Batman: Arkham City* (2011) uses the audio middleware engine Wwise by AudioKinetic. Wwise is a very advanced interactive audio and music engine. Even so, when composing for this system, the audio team needs to understand its strengths and limitations to use the system effectively.

Recent technology advances such as cloud storage and remote rendering for games are rapidly changing how games are delivered to consumers. In the future, therefore, game developers may have fewer limitations in terms of technology.

Although it can be a huge benefit to composers to understand the technology and score design that will ultimately be integrating their music into the game, it isn't essential knowledge. On large games, an entire team of people may work on creating the music for a game. In these

circumstances, getting the right creative fit may be more important than having a composer who knows about the technical and adaptive techniques that will be implemented in the final game. The team would include interactive music specialists who take the raw materials from the composer to create the adaptive music components. In this scenario, composers may never have to deal with formats other than handing off their Pro Tools sessions (or similar digital audio workstation [DAW] files).

note

There are many unique challenges to composing music for games:

- Repetition is caused by play repeatability, size of game, and budgetary constraints.
- There are often technology constraints like limited memory, limited voices, and new formats depending on the platform.
- Games require music to be programmed and implemented based on a rule set.
- Games are interactive and require variable synchronization.

Types of Music within Games

Composers can use music in many different ways within games to achieve the desired emotional effect. In this section we begin by defining the categories of music used within video games. In the next section you'll learn about the function of music in games.

Sometimes as composers we're adding music to support the game on an emotional level (extra-diegetic). At other times we're adding to what the avatar of the player might be hearing as part of the game universe. It's useful to define these different types of music in terms of function.

Extra-Diegetic Music (Underscore)

Extra-diegetic music, or non-diegetic music, refers to music that is added to a scene purely to enhance the emotions that the player should be feeling. This is commonly known as underscore. The musical ensemble or device that plays this music is not established to the player in the game. Its existence is not even inferred in the game world. Underscore works on a subconscious level to bring story elements together in its use of themes and motifs, as well as to intensify the emotional context of a scene. It also may inform the player or viewer of something that might be off-screen. Extra-diegetic music also helps with setting the stage by implying a

specific time in history or a place within the world. With extra-diegetic music, the viewer does not expect to see the instruments on the screen playing the music.

It is commonly said that the best film scores are not noticed by the audience or viewer. More obvious (and clumsier) scores take the viewer out of the experience of watching a movie by bringing what should be an unconscious element to the forefront for the listener.

A classic film example is John Williams's two-note motif from *Jaws* (1975). Whenever there is impending danger of the shark, the audience hears this motif. Later in the film, even though the shark is not on screen, this motif builds tension for the viewers because they expect to see the shark soon. Williams is a master film composer, as he actually uses this motif to teach the audience that this music equals an impending shark attack. Later in the film he breaks this mechanic by not playing the two-note motif before the shark's entrance; when the shark appears, it's one of the most terrifying moments in the film. Williams uses music to trick the audience into believing something based solely on his use of music, increasing the horror of the film.

In almost any modern video game, we hear extra-diegetic music enhancing the emotional underpinning of the story. In the game *Red Dead Redemption* (2010), for example, we hear an Ennio Morricone–inspired score as we follow the adventures of a former outlaw in the American frontier. The interactive score changes dynamically as the player goes from scene to scene, and from plot point to plot point. In the game *Bioshock* (2007), Garry Schyman composes music for an underwater city engulfed in chaos using aleatoric music techniques, along with solo violin passages creating a terrifying but beautiful collage of themes.

COMPOSER PERSPECTIVE: REPETITION KILLS SUSPENSE

Bear McCreary

The more often the audience is exposed to a sonic idea, the less impact it has. For film and television, you can bend (or even take advantage of) this rule, because you know exactly how often the audience will hear a musical idea. In video games, however, repetition is often at the mercy of the gamer's decisions. Composers must be extra careful to maximize the impact of their music.

The primary function of music in video games is to create tension. The resolution of that tension amplifies the gamer's euphoria when finishing a goal, feeding his or her desire to keep playing. Historically speaking, this tension has been created using music that repeats.

Why does repetition kill suspense? Have you ever heard an annoying car alarm blaring for so long that you notice it again only when it finally shuts off? Have you ever been in a loud, crowded restaurant, but noticed that after a few minutes you are chatting with your friends without interference?

Our brains have evolved to filter out information that has no meaning. Our early ancestors developed the ability to register changes in their surroundings to survive. A creature constantly focused on the sound of a babbling brook may not notice the new sound of rustling reeds that hail the arrival of a deadly lion preparing to pounce. Without our ability to subconsciously filter out repetitive sounds, our entire perception of the world would be a chaotic cacophony.

Let's apply this logic to video games in a hypothetical scenario. You've composed a scary cue to underscore the player engaging a new enemy. During the first encounter, the gamer is tense and on edge, because his or her subconscious mind momentarily struggles to categorize this new, dissonant sound. If the music and the situation are both the same the second time around, the impact is diminished. Before long, the subconscious makes a connection between that music and that event and filters out the music, because the information no longer carries meaning. Music you wrote to be as ominous as a lion in the reeds is now no more effective than a babbling brook!

It may never be practical or even desirable for a video game score to provide completely new music for every single moment in the game. Composers should remember this rule and work with developers to push the boundaries of technology to allow for music that feels less repetitive. We are very near the moment when a video game score will finally rival the narrative satisfaction of a score for scripted narrative in film and television.

Long live suspense!

Diegetic Music (Source Music)

Diegetic music is music that a character would hear if he or she were actually in the game world itself. In films, we usually refer to this as "source music." If we see someone on screen playing a violin, we expect to hear the violin. The function of diegetic music function is to enhance the player's experience. Typically it's used to increase the realism of the simulated world.

In *Bioshock Infinite* (2013), there are moments when we see various musical ensembles, including a barbershop quartet. When we see the barbershop quartet on screen and hear them singing, it's an example of diegetic music.

Another example is from *Mass Effect 2* (2010). When the player is standing outside of a night-club, he hears the music from inside. This is music that the player would be hearing as part of the world itself.

Games like *Grand Theft Auto V* (2013) and *L.A. Noire* (2011) are 3D simulations of another world. Both games revolve around a driving mechanic where players drive different vehicles through this simulated world. These vehicles have radios, and players can change the radio

station, so the music changes as they're driving through this world. This is another example of diegetic music.

One last example of diegetic music within games occurs at the beginning of *Assassin's Creed III* (2012), when the player is sneaking around a theater while an opera is being performed. We see the actors and musicians, and the music is coming from the universe itself.

In all of the previous examples, the music placement in the speakers is also very important to simulate where the music is coming from. We use real-time panning, equalization, and reverb techniques to simulate the position within the 3D space. As the player moves around this 3D space, the instruments or devices must pan dynamically to simulate the fact that this is a real place.

In many instances, diegetic music is *licensed music*. Licensed music has been created previously by an artist, and the game publisher must obtain the rights to use this music within a video game. On large games, a music supervisor may coordinate the licensing process by obtaining (and paying for) the relevant rights to the piece of music.

While playing a game, if we see a jukebox or some other music-making device or musician on screen, then we'll want to hear the music that it creates. The realism of that world or simulation would be broken if we didn't hear the sound. As composers, it's critical to be wary of destroying the illusion of a world for the player.

Occasionally the distinction between diegetic music and extra-diegetic music becomes blurred. For example, we might start off listening to diegetic music, but then as the story progresses the same theme can be heard holding emotional elements of the storyline together.

Music as Gameplay

The third classification of music in games is music as gameplay—that is, when the player generates the music in real time as he or she plays the game.

One might consider all interactive music in games to be "music as gameplay," but the difference here is that the game system is reacting *directly* to the actions of the player. Most interactive music systems have an indirect relationship to the underlying music system. For instance, when a player makes choices in a game that then affect the state of the character (e.g., explore or combat), the music would change based on those indirect choices. This is *not* an example of music as gameplay.

Games that use the music-as-gameplay paradigm typically operate on a lower level of detail than state changes in the music. If the game player makes an action that triggers a sound in rhythm or creates a sequence of notes, that would fall into this classification.

Game developers work with composers to devise an overall music system that complements the gameplay, defining the rules of how the music will play on a note-to-note or phrase-to-phrase level.

There are several different gameplay scenarios in this classification, including simulated performance, player-generated music, and rhythm action.

Simulated Performance

Games like *Rock Band* (2007) and *Guitar Hero* (2005) use musical controllers to simulate the effect of being in an actual band performing the music. These games typically use licensed music from popular bands and artists. The music in these games is played back depending on how well the player performs in the game. The better the player performs, the closer to the original licensed song the result will be.

Player-Generated Music

In some games, the player creates music dynamically while playing the game. In *PaRappa the Rapper* (1996), for example, the player is able to direct the lead character to rap. In what is essentially a rhythm action game, the player presses the control in rhythm in a specified order to get the lead character to rap in real time.

Another example of player-generated music is found in the first-person shooter/rhythm action game *Rez* (2001) from game designer Tetsuya Mizaguchi. In this game, the player creates music dynamically by shooting down geometric shapes in rhythm with the music, triggering musical notes and patterns.

Last, the game *Bit.Trip Runner* (2010) is a 2D platformer where the avatar runs from left to right at a constant pace. As the player jumps or collects coins in the world, a musical phrase or set of notes begins to play.

Just as we sometimes blur the lines between diegetic and extra-diegetic music, so you could make a case that games like *Portal 2* (2011), which allow you to manipulate physical objects in a 3D world that make noise, feature player-generated music.

Rhythm Action

The last category of music as gameplay is rhythm action games. *Dance Dance Revolution* (1998), *Amplitude* (2003), and *Space Channel 5* (1999) are all examples of rhythm action games. In these games, players listen to the rhythm of the music and then synchronize their actions by either dancing or hitting buttons on a controller in time with the music to gain rewards.

Player Customized Music

Players may also choose to import their own music into a game. The original Xbox 360 release mandated that every game must be made in such a way that you could turn off the musical underscore and replace it with user-chosen content. If the player wanted to hear John Williams's *Superman* (1978) theme while he played *Halo*, for example, the system would allow for that.

To enable users to bring their own music into a game, systems would allow the players to encode music from a CD or flash drive directly to the memory of the console. Then, while playing a game, users could select to hear their personalized music within the game.

Entire games have been built around customized music, including *Audiosurf* (2008) and *Vib Rib-bon* (1999). These rhythm action games create dynamic game levels built around the music that the player chooses.

Player-customized music is also popular in racing games. The 2012 release of *SSX*, which is a snowboarding game, allows players to import any music that they want into the game. The game then uses various digital signal processing (DSP)—filters, beat-matching delays, reverbs—remixing on the fly during gameplay to augment and enhance the custom music.

Exploring Music Function within Games

Music can be a compelling and useful device to bring players into the game or to enhance the storytelling aspects of character-driven games. Breaking it down even further, music within video games has various functions, ranging from ephemeral state changes to longer-lasting thematic devices. Following are the various music functions that we find in games:

- **Set the scene.** Players need clues about where they are when they enter a virtual game environment. Music can help define the time and place by using instrumentation and/or harmonic relationships. The *Final Fantasy* series (1987–2010) is known for its extensive use of musical themes to establish locations within the game. In *Super Mario Bros.* (1985), different parts of the level have their own themes (e.g., aboveground versus underground).
- Introduce characters. Throughout many games, a tapestry of characters may be introduced to the player. Character themes can help the player develop perceptions of certain characters (allies or villains) or enhance the emotional connection between characters. In addition, themes may help organize a large cast of characters in a very sizable game. The *Mass Effect* trilogy (2007–2012) uses many character themes and is a great example of how to weave these themes throughout an enormous game.
- Signal a change in game state. Music is often used to signal when a player has gone from one state to another. Typically this is an ephemeral change that quickly goes back to its original state. This technique is frequently used in vertical resequencing (layering of tracks), which we'll focus on in the next part of the book. Red Dead Redemption (2010) uses this technique to distinguish between the exploring, riding, and combat states.
- Increase or decrease dramatic tension. Tempo and the addition of music layers are frequently used in games to increase the tension. In both the early games Asteroids (1979) and Space Invaders (1978), the tempo increases to raise the dramatic tension toward the end of each level.

- Communicate an event to the player. Frequently in games, composers use musical stingers to signal something to a player. In many games a musical stinger is played when a character dies in a particular level. A musical stinger is a short musical phrase (3–12 seconds) that acts like a musical exclamation point and is played to enhance a particular event in a game or film. In the game Metro: Last Light (2013), a musical stinger plays once the combat sequence has been completed.
- Emotionally connect a player to a game. Developing an iconic theme for your game, like the themes in the *Legend of Zelda* (1986–2013) and *Halo* (2001–2013) series, can go a long way toward establishing the overall tone and feel of your game and instilling anticipation and excitement when players hear it.
- Enhance narrative and dramatic story arcs. Similar to films, games generally have an overarching narrative and dramatic arc that plays out across the story. The music can enhance the emotional high and low points in your game.

BREAKING DOWN THE STRUCTURE OF A VIDEO GAME

Games can be broken down into a number of elements. Following is a description of each of the elements commonly found in games:

- **Introduction Movie:** An introduction that plays generally when the game begins.
- Attract Sequence: A movie that plays after the game is left alone for a period of time; it is used to advertise the video game in game shops.
- **Main Menu and Title Screen:** Generally a mostly static screen that waits for the user to start the game; it appears after the introduction movie.
- Loading and Transition Screen: After the player has chosen to start the game from the main menu, this screen appears while the game is loaded from the media or Internet. In general, it is difficult to put music on this screen because it consumes too many hardware resources.
- Cinematics (Cut-Scenes or Full-Motion Video [FMV]): A full-screen movie that plays to introduce the story or exposition elements during the game. Cinematics are typically linear video with very limited or no player interactivity.
- **Gameplay:** When the player is actually playing the game by either solving puzzles or controlling an avatar.
- In-Game User Interface (UI) Screens/Level Select Screens/Pause/Settings:
 User interface screens that typically interrupt gameplay. Special care must be taken to figure out how to handle the music in these sections.

Synchronization and Integration of Music

Inside film and linear media, we can usually rely on time codes or streamers and punches to synchronize our music. In contrast, in a game, the player is essentially directing the next shot in real time.

The game engine that is built makes requests to the music engine to change from one state to another, or to play a musical stinger. These requests are called "hooks" because the game is hooking into the music engine.

In many cases a programmer from the development team needs to program these hooks into the game for the music system to run properly. The game development team and the composer strategize about which actions in the game would trigger a music hook. This allows the music to stay appropriately in sync with the gameplay. After all, it's unlikely that you would want to hear the intense boss-battle music when you killed the boss minutes ago. The best video game scores are connected to the game engine so that the music is aware of what's happening in the game.

Although you'll explore this topic more in depth in the next chapter, here's a list of triggers you might see in a game that affect the music:

- Changing the emotional state (e.g., going from explore to combat)
- Moving to a different location within the game
- Number of enemies that are attacking
- Amount of health the player has remaining
- Time of day or the weather
- Proximity of an enemy
- Solving a puzzle or finding a treasure
- Killing a boss or finishing a stage

Serendipitous Sync

What happens when there is no synchronization of music in a video game? This is typically called serendipitous sync. It's similar to turning on the radio while watching a movie. Sometimes the music lines up wonderfully, but mostly it doesn't. There are ways to write music that suits the game without using external synchronization, but it might not be as reliable. Probably the most famous example of serendipitous sync is Pink Floyd's album *Dark Side of the Moon* (1973) played in tandem with the film *The Wizard of Oz* (1939).

Some games rely on serendipitous synchronization, including the original *Bioshock* (2007). In that game, music cues begin when you enter a new area, but the music is static after that

point—meaning that it doesn't change based on player control. It may end serendipitously when you finish a battle, but it also may end earlier.

Music Conceptualization

To create successful music for a game, the game development team works with the composer to conceptualize the music. Conceptualization helps define the stylistic, creative, and functional goals of the music before the actual composing begins.

In this section we discuss how to conceptualize the score. You'll find some guidelines for how to establish the overall creative direction, but you should feel free to revise these ideas based on whatever process works best for your team. Music conceptualization is often jointly developed between the composer and the game developer, although very large games may be an exception (see the note on this topic on page 32).

When setting out to write music for a game, it's best to come up with an overall strategy first. The following steps will help you keep focused as you determine which direction is the most effective for your game.

1. Gather and Assess Materials

When beginning to generate the overall creative framework for a music score, the first step is to gather all the materials related to the game: game design documents, scripts, art assets, prototypes, and notes. Some or all of these assets might be missing when you begin the project, and in many cases composers start with very little on a project. Don't be too concerned if there isn't a lot to go on. You can revise the creative direction as more material is defined.

2. Prioritize Primary Music Objectives

The materials gathered in the first step will help you start to prioritize the most important ideas that you want to convey in your music. If you had to distill all the information down to a few key ideas, what would they be? For instance, are the puzzle elements the most important aspect of the game, or is the overall story more important, or a particular character? Making these decisions will better inform the music you create for your game.

Once you've narrowed down your primary objectives, then it'll be easier to determine how the music will function in the game. Compare your objectives with the music functions listed earlier in the chapter.

Are there secondary objectives that you might want to include in the overall creative strategy? Many games use multiple objectives in defining the overall music direction.

COMPOSER PERSPECTIVE

Tetsuya Shibata

When I'm composing music for a video game, the first step involves a meeting with the director where we closely examine and discuss the game's content, story, and world or setting. Then, we discuss what we would like the user or gamer to get out of this game and come up with several keywords to focus on. For example, the keywords that I was given for *Devil May Cry 3* were "an epic sibling fight"; in *Devil May Cry 4*, they were "love and friendship."

Especially for those games that have a strong storyline, I use the keywords initially to compose the main theme. Then, I arrange the main melody several times and disperse it here and there throughout the rest of the game. I do this to help build empathy toward the world of the game for the players.

Particularly in my case, before I compose anything I study the entirety of the game and all of the scenes that are shown to the audience and create a blueprint of the music.

I even go abroad for two weeks to observe the voice recording process to get a better understanding of the larger scenes. This helps me develop an even deeper understanding of the emotions and the attitudes of the characters as they interact with each other. I should add a disclaimer here: I have never met another composer who goes to the voice recording sessions, so maybe my method is unique.

3. Create an Asset List

Once you've determined your primary and secondary objectives, start planning the music asset list around them. A music asset is any cue that you'll need for the final game. If you're basing your music around character themes, then write out which themes you'll need and when you might use them in the game. Later in this book, we'll look at how best to determine the lengths of music for particular sequences.

4. Define Interactive Elements in the Score

The music score may contain additional interactive components that allow it to change in real time based on player decisions. In this step of the conceptualization phase, you want to define the parameters in the game that control the various elements in your score. These parameters might include Al behavior such as when an enemy attacks or when you solve a puzzle. These game parameters might be mapped to changes in the music.

See the previous "Synchronization and Integration of Music" section to help define the interactive elements. Throughout this book, you'll continue to learn about many interactive scoring techniques for use within your game.

5. Create a Supporting Audio Style Guide

A style guide is a tool that many designers use to help focus the direction of a creative element. In art, style guides are used to define the overall look and feel of a project. For a video game, an art style guide is made up of many different pictures representing the unified direction that the game should take.

An audio style guide usually consists of a variety of musical selections that represent musical genres and that help the design team hone in on the final direction of the music. It also helps the team identify criteria for judging whether a final piece is effective.

Generally, when groups listen to music for the first time, if they don't have a specific criterion on which to judge the music, they use their own music background to judge it. This can be difficult for a composer when presenting new music. For example, perhaps the game designer on the project broke up with his girlfriend while listening to music that had a saxophone in it. This association may have caused the game designer to hate saxophones. If this person is listening to the first presentation of the game music without the criteria in place, he's going to hate the saxophone no matter what, even if it's the best instrument for the game. In such a case, it's important to establish that the game designer doesn't like saxophone music before the composer begins working on a project.

The audio style guide helps inform the overall direction of the music before the composer begins writing. When each new piece of music is written, it can be compared to the initial style guide to determine whether you're making progress on your project or whether you need to rethink your initial approach.

Here is a list of criteria that you should establish with a style guide:

- Genre of the music (e.g., classical, techno, jazz)
- Tempo of the music (e.g., fast, slow)
- Instrumentation (e.g., orchestral, synthetic)
- Size of the group playing (e.g., intimate, grand)

You may need to have different style guides for different parts in the game. For example, if the character in a game is jumping around the globe as in *Uncharted 2: Among Thieves* (2009), each part of the game may need its own style guide.

6. Create an Audio Design Document

After you've done all of the work establishing your objectives, asset list, and style guide, it's important to create a document that you can share with your development team that outlines the overall creative strategy for your game. The audio design document is a compilation of the overall audio strategy for the game in written form. This document usually includes information

about not only the music, but also all of the audio including sound effects (SFX), dialog, and music. In this book we focus primarily on the music aspects. The audio design document should contain information about the following music items:

- Overall creative direction for the style of music
- Music interactivity and implementation outline
- Preliminary asset list outlining the number and lengths of pieces
- The file names and formats that will be used

7. Revise

Throughout game development, you may find that some of your initial assumptions have changed. For this reason, it's important to update and revise your audio design document as the game progresses. Developing design documents is a standard practice in the game industry, as these documents generally contain all the information critical to the game development team and are considered a blueprint for how the game will be made.

note

On large games, the game publisher, franchise holder, or game developer may not involve the composer in many of the steps outlined in the music conceptualization phase. Frequently these companies employ audio directors or music supervisors who work to establish the overall creative direction of the music before hiring a composer for the project. These individuals then serve as the primary point of contact when conveying preproduction materials to potential or hired composers. Additionally, on large titles, the design documents are almost always drafted at the publisher/developer level and are not the responsibility of the composer.

Analysis and Critique of a Game Score

In this section, we begin to explore what makes a good game score versus a bad one. To analyze game scores in any way, you'll need to form a language through which you can express your judgment of a composition's effectiveness within the context of gameplay. Developing this language is a key component in developing the most effective music for your game.

Composition is a purely creative endeavor; therefore analysis of the music is purely subjective. Decisions regarding music are qualitative as opposed to quantitative. Unfortunately, there is no right answer to the question, "Is this music good?" Therefore it's important for you to establish a set of criteria of what satisfies the needs of the story so that you can best judge the effectiveness and determine whether you've reached your goal after the music is written. A style guide

is generally an excellent way to begin narrowing down which kinds of music work for your game. Better yet, it can define what's *not* appropriate for your game. In addition to the previous criteria, there are several other ways of determining whether a game score is effective:

- Do you notice the music, or are you enveloped in the storytelling of the world?
- Is the game succeeding in the goals outlined in the audio design document?
- Is the music score seamless, or does it jump from one piece of music to another without a transition?
- Does the music effectively enhance and support the overall story or experience?

Review

To build a language to use when describing video game music, it's important to understand some of the unique characteristics of the medium of video games. There are many important differences between linear experiences like film and nonlinear experiences like video games. These differences affect how the music is conceptualized, composed, and synchronized in video games. Some of the prominent differences include the following:

- Type of experience
- Length of experience
- Number of plays
- Game mechanics
- Pacing, synchronization, and flow
- Multiple story paths and repeatability
- Technology

Video games use music in different ways, including on a purely emotional level to increase empathy in the player, or as music that can be heard by the player in the game world itself. The important classifications of music within games include these four categories:

- Diegetic music
- Extra-diegetic (or non-diegetic) music
- Music as gameplay
- Player-customized music

Music can be a compelling and useful device to bring players into the game or to enhance the game's storytelling aspects. Music within video games can have many different functions:

- Setting the scene
- Introducing characters

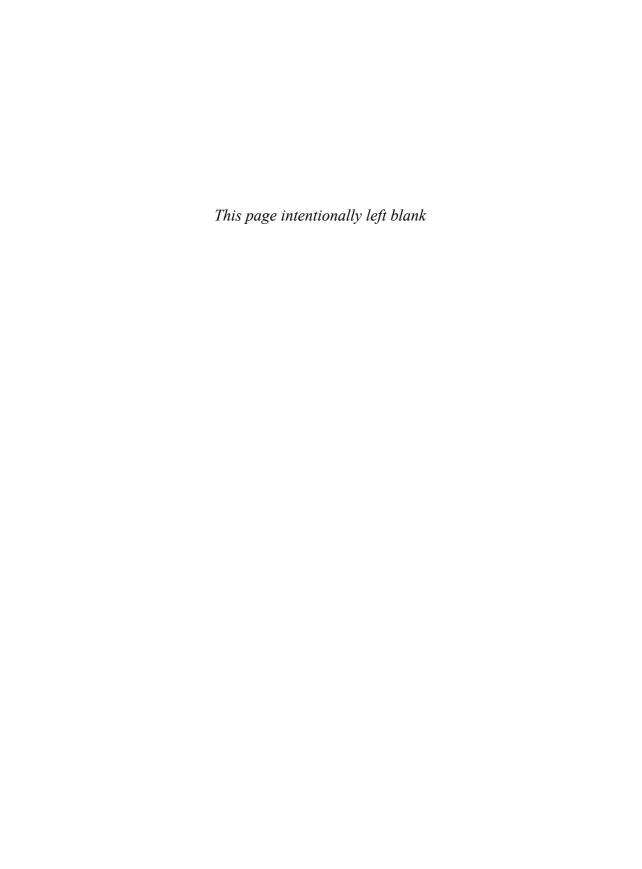
- Signaling a change in game state
- Forging an emotional connection to the player
- Enhancing narrative and dramatic story arcs

To create successful music for a game, the game development team works with the composer to conceptualize the music. Conceptualization helps define the stylistic, creative, and functional goals of the music before the actual composing begins. The following steps are designed to help you keep focused as you determine which direction is the most effective for your game:

- 1. Gather and assess materials.
- 2. Prioritize primary music objectives.
- 3. Create an asset list.
- **4.** Define interactive elements in the score.
- **5.** Create a supporting audio style guide.
- 6. Create the audio design document.
- 7. Revise.

Exercises

- **1.** Analyze a portion of any commercially released game by listing all the music cues and defining them in terms of function and categorization.
- 2. Broadly talk about any music triggers and music synchronization in any commercially released title.
- Perform a critical analysis of the music in any commercially released game to determine its effectiveness.



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