“Aaron Marks’ The Complete Guide to Game Audio should be compulsory reading for anyone considering a career in game audio.”

Greg O’Connor-Read, Founder & Editor, Music4Games

“Aaron’s book is recommended reading in my USC and UCLA Composing Music for Video Games courses. It is a well-rounded presentation of what we video game composers do every day. Anyone wanting to know more about this great industry should start here!”

Lennie Moore, Composer, Outcast, Dragonshard, War of the Ring, Dirty Harry

“Aaron knows his stuff!”

George Sanger, The Fatman–Game Audio Legend

“Let the fat lady sing! Aaron has created the definitive resource for all things game audio. Bravo, Aaron!”

Chris Rickwood, Composer, Rickwood Music LLC

“Aaron Marks the spot. An informative, educated, thorough look at the game audio industry, and provides valuable insight into the production process of many of the top working professionals. The Complete Guide to Game Audio continues to be one of the best resources for game audio engineers and composers.”

Keith Arem, Creative Director, PCB Productions

“Seven years ago, Aaron Marks redefined how to learn the art, science and business of making world-class game soundtracks with the release of ‘The Complete Guide to Game Audio.’ His groundbreaking contribution to game audio continues in this, the second edition of his seminal work!”

Todd M. Fay, Professional/Personal Coach (www.toddmfay.com) & President of DemoNinja (www.demoninja.com)

“This book has changed my life! To understand the game audio business, creativity and the people who are involved in this industry, Aaron Marks has put together the perfect easy-to-read manual. If you are reliable, talented, and excited about how to pursue a path into game audio, then this is THE BOOK for you. I read it, loved it, read it again, and ultimately followed Aaron’s advice. Now I owe him my life…and so can you. Buy, immerse yourself, and tell everyone you know about this book!”

Watson Wu, Composer/Sound Designer/President, WOOTONES, LLC (a media & publishing company)

“Aaron Marks’ book is THE most insightful look into the world of sound for the multi-billion dollar video game and interactive media industry. It is a resource as valuable to game producers and developers as it is to those looking to venture into the field as sound artists and composers. Bravo Mr. Marks!”

Jon Holland, Game Composer and Recording Artist
“Seven years after his successful first edition, Aaron Marks treats us to the long awaited up-to-date second version of “The Complete Guide to Game Audio” and I can only say, wow, he has pulled it off again! The book boasts near to 500 pages filled with all the precious information the entrepreneurial composer/sound designer will ever need to get his foot in the door of the game companies. It covers all the important topics from creating the perfect demo reel to closing the deal, from choosing your tools to delivering top-notch audio. While giving a thorough and deep presentation of today’s game audio world, it’s also an easy and entertaining read topped off with lots of anecdotes and tricks of the trade taken directly from the mouths of some of the finest game audio creators. A must-buy for everyone turning a serious eye towards a profitable career in the game audio business.”

Henning Nugel, Composer/Sound Designer, Nugel Bros. Music

“Aaron has created an extremely detailed and informative resource for all levels of composers and sound designers. Additionally, this book would be tremendously helpful for any game industry professionals who would like to gain understanding, insight and appreciation into the very complicated process of writing music and creating sound design for video games. Aaron has covered every possible subject that a person would encounter from start to finish in the game audio process including valuable creative and technical information as well as the ever-so-important—and many times most difficult part of the job—art of business negotiations and contracts. He has also included numerous inserts from other successful game audio professionals giving their real world perspectives and detailed insights related to their own experiences. Great job Aaron!”

Mark Scholl—Award-winning Composer, International Game Technology (IGT), and Screaming Tigers Music, Inc.

“Aaron Marks’ work is definitely a landmark achievement for the game audio industry. It clearly explains many concepts that separate game audio skill sets from that of the film and television industries, and it does so in an accessible and fun style that welcomes all audio enthusiasts to join our exciting and interactive world.”

Alexander Brandon, CEO, Celadon Studios

“Mr. Marks has done it again! I cannot imagine trying to break into the gaming audio industry without this book in my hands. It provides newcomers and seasoned vets alike access to the type of information crucial to not only break into, but to succeed in this highly competitive industry. This is information that will never show up in a Google search. It’s like having a dozen industry pros by your side to answer any questions you may have. I am thrilled to have been a part of this book as it is a vital resource for so many.”

Darryl S. Duncan, President/CEO, GameBeat Studios, LLC
The Complete Guide to Game Audio
To the two most wonderful people in the world, my wife, Cynthia, and my daughter, Kristina. Without their love and support this book would not have been possible.

While planning for this second edition, the game audio world lost two incredibly talented and selfless artists. I also dedicate this effort to the memories of Ingo Nugel and Simon Castles—both true friends and beloved colleagues who are truly missed.
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What's on the DVD
FOREWORD

By Keith Arem

For the past 15 years, I’ve had the privilege to be involved in one of the most fascinating and dynamic professions around. Composing, creating, and producing sound for video games is a challenging entertainment career—every bit as exciting as, if not more exciting than, working in the film or television industry. The games industry is a diverse and changing world, and this book can be your passport to a rewarding and fruitful profession.

The Industry Then

People often ask me how I got started in the games industry. Being a game composer, voice director or sound designer isn’t the most well-known profession—so how does someone actually get started? Well, the first rule of thumb is…you have to love games!

*Defender, Tempest, Berserk, Asteroids, Choplifter, Battle Zone, Phoenix, Sinistar, Dragon’s Lair, Spy Hunter*—those were the glorious programs that shaped my early childhood growing up. Sure my education revolved around math, social studies, English, and all the usual school requirements—but video games influenced me in ways that no class ever did. Video games opened my eyes to new worlds, new ideas, and especially new sounds.

As a child, I remember seeing *Tron* in the theater and thinking how amazing it would be to live in a universe of video games. My wish was soon answered when my father brought home an Apple computer for the family. I quickly realized that this new machine was much better equipped as a home game machine than a mere family word processor.

As I got older, I became involved in synthesizers and playing in bands—and discovered I could combine my love of computers with my love of music. Throughout high school, much to my parent’s dismay, I would drag our family computer to my local band gigs and sequence live on stage. After high school, I went on to earn a Bachelor’s degree in Audio Engineering and Electronic Music Synthesis—which perfectly integrated my passion for computers with music and recording. I was offered my first record deal my freshman year of school, and I signed a recording contract with my band Contagion on Capitol Records during my senior year of college.

Even on tour, I couldn’t escape my passion for games. One of my fondest memories from our first North American tour was playing *Street Fighter* in the back of the tour bus between cities. One concert, we even hooked our Nintendo to the other band’s video projection wall and played a match during their concert performance.

When I returned from the tour, I decided to make my introduction into the game industry by approaching a local developer in Los Angeles. After quickly learning the ropes with early console development, I was approached by Virgin Interactive to become their...
in-house staff composer. Within a year, I was promoted to their Director of Audio and began supervising all music and sound for Virgin’s internal and external titles. Directing audio for one of the largest game publishers in the United States and Europe gave me a fantastic firsthand education, and a wonderful working experience in one of the fastest growing industries of its time. After several years as an internal director, I decided it was finally time to establish PCB Productions—to focus on high-end game audio. Since starting my own facility, I have had the great opportunity to work with some of the industry’s finest developers and publishers. Over the past several years, I have been fortunate to be part of many successful franchises, including Call of Duty series, Tony Hawk Pro Skater series, Ridge Racer series, Prince of Persia series, Ghost Recon series, Spiderman series, X-Men series, Iron Man, Star Wars, and many, many others.

The Industry Now

The games industry can be a very exciting and dynamic place for musicians and sound designers. Through sound and music, a game can completely immerse a player in another universe or reality. The creative freedom to manipulate moods and environments is limited only by the technical capabilities of the machine and a musician’s imagination.

While being creatively liberating, interactive game audio can also be technically demanding. Scoring and designing audio for games can often be much more challenging than motion pictures. This is due to the simple fact that games are, by nature, nonlinear. An example of this can be simply demonstrated by a car passing the camera. In a film or television program, where the picture is established and consistent, the image of the car pass-by is a linear time-established scene that can be scored, synchronized, recorded, and mixed by a sound designer or musician. By contrast, in a 3D game environment there can be hundreds of variables that determine how and where the car exists within a 3D space. Because a player can view the car from a multitude of angles, the sound must be capable of being manipulated to match the image from any viewpoint. A simple car sound may need to be looped, layered, panned, pitch-shifted, down-sampled, and format converted—just to accommodate a simple car-pass sound.

One other obvious difference from films is that an audio designer typically doesn’t always have the control to “mix” the sounds in-game because most titles require sounds to be individually manipulated and programmed within the code. In a game environment, there may be hundreds of pieces of dialog, music, ambience, and Foley sound effects—each with its own volume, pitch, and positioning within the 3D environment. It is generally up to the sound engine and programmer’s code to determine how these will be mixed real-time in the game. (It’s no wonder that even the most amazing sound effect or piece of music can be utterly annoying if it is played incorrectly or too repetitively in a game!) It’s important for audio designers to learn as much about how their sounds will be implemented, as they do about how their sounds should be created. Having a strong understanding of game mechanics, programming techniques, and platform limitations will make your life much easier.

Until recently, software sound design had not been recognized as a well-regarded well-paid industry profession—mainly due to the poor fidelity of most consoles. In the past, PC speakers and console systems had limited audio quality and kept the resolution of sound to a minimum. In recent years, there has been a strong effort to enhance sound
for games—and next-generation systems and speakers have made great strides to address memory and bandwidth for audio. Dolby encoding, Blu-ray DVD, surround sound speakers, and increased memory have given sound professionals a new field to play on.

One fascinating aspect of the games industry is that the technology changes continuously. With every new technological development, enhanced software package or hardware device, each new game title strives to out-perform the previous one. As technology improves by leaps and bounds each year, every game title attempts to implement new ways of making games faster, bigger, and louder than before. For an audio professional, this means constantly adapting to new recording techniques and establishing new compositional methods to keep up with an ever-evolving industry.

Because the games industry is a “hit-driven” business, many titles these days are based on established properties or major motion picture properties—allowing game players to interact with worlds and characters originally only on the silver screen. Nowadays, almost every box office hit spawns multiple interactive games based on its property. This is also true for well-known superheroes, comic books, sports teams, racing cars...you name it. For a game audio engineer and composer, this often means working on prestigious titles—sometimes working with star talent and being involved with big Hollywood productions.

Another interesting observation about the games industry is the youthful age of its creators. In most companies, the average age of game development teams ranges from 20 to 40. This is not an industry of children, but rather a generation of people who grew up playing games and chose to deviate from a “normal” career route. Until recently, a career in the games industry was seen as a low-wage job for kids. However, in recent years the games industry has yielded higher profits than the music and film industries combined. Because most musicians and audio designers already know the struggles of justifying their careers, the game environment is a great place to fit in...and never have to wear a tie.

Given the relative youth of our industry, the game community is unfortunately void of experienced, well-rounded role models. As I forged my way through the industry, there were not many well-known game audio professionals who stood as an example of how to make a career in games. Sure, Bill Gates was an inspiration for computer entrepreneurs everywhere, but there weren’t many game audio professionals who led the way for future generations.

*The Complete Guide to Game Audio*, Second Edition serves as that role model for game audio and is a great resource for anyone looking to enter this fascinating industry. New and old engineers alike will find this book as a strong reference tool to understand the interactive arena and how to survive in it. This definitely would have been useful when I was getting started.

Good luck with your future projects, and I look forward to playing one of your games soon!

Keith Arem

PCB Productions
Music had always been a part of Aaron Marks’ life. But it wasn’t until 1995, when his overgrown hobby became On Your Mark Music Productions, that he began selling it to the world. He began with the local radio and television scene, composing jingles and scoring public service announcements—with eventual sights on Hollywood. Instead, he fell headfirst into the games industry, where his sound design and voice-over talents also exploded—leading him to music, sound design, and voice-over credits on over 100 game titles for the Xbox and Xbox 360, PlayStation 2 and 3, Wii, Dreamcast, CD/DVD-ROM, touch-screen arcade games, Class II video slot machines, Class III mechanical and video slot machines, coin-op/arcade games, online and terminal-based video casino games, and numerous multimedia projects.

In addition to The Complete Guide to Game Audio, Aaron is the lead author of Game Audio Development and has written for Game Developer Magazine, Gamasutra.com, Music4Games.net, and the Society of Composers and Lyricists. He has authored an accredited college course on Game Audio for the Art Institute Online, is a member of the AES Technical Committee for Games, was on the launch committee for the Game Audio Network Guild (GANG), and is the owner of On Your Mark Music Productions—where he continues his pursuit of the ultimate soundscape, creating music and sound for a multitude of projects.

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<td><em>The Many Faces of Go Deluxe</em></td>
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<td><em>Hardwood Solitaire II</em></td>
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<td><em>Hardwood Hearts</em></td>
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<td><em>Fallen Heroes</em></td>
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<td><em>SC3</em></td>
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