PART II

Creating and Programming Game Music

Introduction

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Video game music is often sonically similar to film music, particularly when games use musical styles that draw on precedent in cinema. Yet there are distinct factors in play that are specific to creating and producing music for games. These factors include:

- technical considerations arising from the video game technology,
- interactive qualities of the medium, and
- aesthetic traditions of game music.

Apart from books and manuals that teach readers how to use particular game technologies (such as, for example, Ciarán Robinson's *Game Audio with FMOD and Unity*),[1] some composers and audio directors have written about their processes in more general terms. Rob Bridgett,[2] Winifred Phillips,[3] George Sanger,[4] Michael Sweet,[5] Chance Thomas,[6] and Gina Zdanowicz and Spencer Bambrick[7] amongst others have written instructive guides that help to convey their approaches and philosophies to music in games. Each of these volumes has a slightly different approach and focus. Yet all discussions of creating and producing game music deal with the three interlinked factors named above.

[1] Ciarán Robinson, *Game Audio with FMOD and Unity* (New York: Routledge, 2019).
[2] Rob Bridgett, *From the Shadows of Film Sound. Cinematic Production & Creative Process in Video Game Audio.* (N.p.: Rob Bridgett, 2010).
[3] Winifred Phillips, *A Composer's Guide to Game Music* (Cambridge, MA: The MIT Press, 2014).
[4] George Sanger, *The Fat Man on Game Audio* (Indianapolis, IN: New Riders, 2003).
[5] Michael Sweet, *Writing Interactive Music for Video Games* (Upper Saddle River, NJ: Addison-Wesley, 2015).
[6] Chance Thomas, *Composing Music for Games* (Boca Raton, FL: CRC Press, 2016).
[7] Gina Zdanowicz and Spencer Bambrick, *The Game Audio Strategy Guide: A Practical Course* (New York: Routledge, 2020).

Music is one element of the video game; as such it is affected by technical aspects of the game as a whole. The first part of this book considered how sound chip technology defined particular parameters for chiptune composers. Even if modern games do not use sound-producing chips like earlier consoles, technical properties of the hardware and software still have implications for the music. These might include memory and processing power, output hardware, or other factors determined by the programming. In most cases, musical options available to the composer/audio director are determined by the (negotiated) allocation of time, budget and computational resources to audio by the game directors. This complexity, as well as the variety of audio elements of a game, is part of the reason why large game productions typically have an 'audio director'. The role of the audio director is to supervise all sound in the game, managing the creation of sound materials (music, sound effects, dialogue), while co-ordinating with the teams programming other aspects of the game.

For smaller-sized productions such as mobile games, indie games or games that just do not use that much music, tasks conducted by an audio director are either outsourced and/or co-ordinated by a game producer. Additionally, in-house composers are rather uncommon; most composers do work-for-hire for a specific project, and are therefore oftentimes not permanent team members.[8]

Composers must consider how their music will interact with the other elements of the game. Perhaps chief amongst these concerns is the question of how the music will respond to the player and gameplay. There are a variety of ways that music might do so. A game might simply feature a repeating loop that begins when the game round starts, and repeats until the player wins or loses. Or a game might involve more complicated interactive systems. Sometimes the music programming is handled by specialist 'middleware' software, like FMOD and Wwise, which are specifically designed to allow advanced audio options. In any case, the composer and audio directors are tasked with ensuring that music fits with the way the material will be deployed in the context of the game.

Karen Collins has defined a set of terms for describing this music. She uses 'dynamic music', as a generic term for 'changeable' music; 'adaptive' for music that changes in reaction to the game state, not in direct response to the player's actions (such as music that increases in tempo once an in-game countdown timer reaches a certain value); and

[8] For challenges arising from this situation, see Phillips, *A Composer's Guide*.

'interactive' for music that does change directly as a result of the player's actions, such as when music begins when the player's avatar moves into a new location.[9]

Unlike the fixed timings of a film, games often have to deal with uncertainty about precisely when particular events will occur, as this depends on the player's actions. Composers frequently have to consider whether and how music should respond to events in the game. Musical reactions have to be both prompt and musically coherent. There are a great variety of approaches to the temporal indeterminacy of games, but three of the most common are loops, sections and layers.[10] Guy Michelmore, in Chapter 4 of this volume, outlines some of the challenges and considerations of writing using loops, sections and layers.

A less common technique is the use of generative music, where musical materials are generated on the fly. As Zdanowicz and Bambrick put it, 'Instead of using pre-composed modules of music', music is 'triggered at the level of individual notes'.[11] Games like *Spore*, *Proteus*, *No Man's Sky* and *Mini Metro* have used generative techniques. This approach seems best suited to games where procedural generation is also evident in other aspects of the game. Generative music would not be an obvious choice for game genres that expect highly thematic scores with traditional methods of musical development.

As the example of generative music implies, video games have strong traditions of musical aesthetics, which also play an important part in how game music is created and produced. Perhaps chief amongst such concerns is genre. In the context of video games, the word 'genre' is usually used to refer to the type of game (strategy game, stealth game, first-person shooter), rather than the setting of the game (Wild West, science fiction, etc.). Different game genres have particular conventions of how music is implemented. For instance, it is typical for a stealth game to use music that reacts when the player's avatar is discovered, while gamers can expect strategy games to change music based on the progress of the battles, and Japanese role-playing game (RPG) players are likely to expect a highly thematic score with character and location themes.

[9] Karen Collins, *Game Sound: An Introduction to the History, Theory and Practice of Video Game Music and Sound Design* (Cambridge, MA: The MIT Press, 2008), 183–5.

[10] Richard Stevens and Dave Raybould, *Game Audio Implementation: A Practical Guide Using the Unreal Engine* (Boca Raton, FL: CRC Press, 2016), 129–96.

[11] Zdanowicz and Bambrick, *Game Audio Strategy Guide*, 332.

K. J. Donnelly has emphasized that, while dynamic music systems are important, we should be mindful that in a great many games, music does not react to the ongoing gameplay.[12] Interactivity may be an essential quality of games, but this does not necessarily mean that music has to respond closely to the gameplay, nor that a more reactive score is intrinsically better than non-reactive music. Music that jumps rapidly between different sections, reacting to every single occurrence in a game can be annoying or even ridiculous. Abrupt and awkward musical transitions can draw unwanted attention to the implementation. While a well-made composition is, of course, fundamental, good implementation into the game is also mandatory for a successful score.

The genre of the game will also determine the cues required in the game. Most games will require some kind of menu music, but loading cues, win/lose cues, boss music, interface sounds and so on, will be highly dependent on the genre, as well as the particular game. When discussing game music, it is easy to focus exclusively on music heard during the main gameplay, though we should recognize the huge number of musical elements in a game. Even loading and menu music can be important parts of the experience of playing the game.[13]

The highly collaborative and interlinked nature of game production means that there are many agents and agendas that affect the music beyond the composer and audio director. These can include marketing requirements, broader corporate strategy of the game publisher and developer, and technical factors. Many people who are not musicians or directly involved with audio make decisions that affect the music of a game. The process of composing and producing music for games balances the technical and financial resources available to creators with the demands of the medium and the creative aspirations of the producers.

Further Reading

Collins, Karen. 'An Introduction to Procedural Audio in Video Games.' *Contemporary Music Review* 28, no. 1 (2009): 5–15.

[12] K. J. Donnelly, 'Lawn of the Dead: The Indifference of Musical Destiny in *Plants vs. Zombies*', in *Music in Video Games: Studying Play*, ed. K. J. Donnelly, William Gibbons and Neil Lerner (New York: Routledge, 2014), 151–65.

[13] On the process of creating menu music for *Shift 2*, see Stephen Baysted, 'Palimpsest, Pragmatism and the Aesthetics of Genre Transformation: Composing the Hybrid Score to Electronic Arts' Need for Speed Shift 2: Unleashed', in *Ludomusicology: Approaches to Video Game Music*, ed. Michiel Kamp, Tim Summers and Mark Sweeney (Sheffield: Equinox, 2016), 152–71.

Paul, Leonard J. 'Droppin' Science: Video Game Audio Breakdown', in *Music and Game: Perspectives on a Popular Alliance*, ed. Peter Moormann. Wiesbaden: Springer, 2013, 63–80.

Phillips, Winifred. *A Composer's Guide to Game Music*. Cambridge, MA: The MIT Press, 2014.

Zdanowicz, Gina and Bambrick, Spencer. *The Game Audio Strategy Guide: A Practical Course*. New York: Routledge, 2020.