

PRESS START: NARRATIVE INTEGRATION IN 16-BIT VIDEO GAME MUSIC

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ABSTRACT

Ever since Pong graced the screens of video arcades, one of the most influential interactions between technology and sound has been the video game console. Over the past decade, scholars have begun to recognize this interaction with the steady growth of scholarship on video game sound; however, one group of games, that of the 16-bit generation, has been overlooked. The 16-bit era, roughly spanning from 1988 to 1996, was a period of transition and innovation for the medium. The purpose of this research is to identify the elements of narrative integration of 16-bit video game music. To explore these elements, several games from the 16-bit era are examined. The first chapters discuss the common elements of narrative integration, including musical cohesion, identification, mood evocation, and musical codes. The last half of this research is devoted to in-depth discussion of five games; first, the story-driven genre, the Role Playing Game, is represented by *Chrono Trigger* and *Earthbound*. The final chapter gives context to the 16-bit era by looking at three games from *The Legend of Zelda* series. Narrative integration is discovered to be an evolutionary step in 16-bit video game music. Games of this era were more capable than

previous generations of including cohesive musical ideas and identification of areas and characters. Composers used the improved technology of 16-bit systems to create pervasive moods which affected players' experiences. Finally, musical codes from both film and video games of previous generations were iterated and improved upon. The way in which 16-bit games respond to and utilize elements of narrative integration had implications for the future of game music. Many current trends of contemporary video game music can trace their origins back to the 16-bit era.

APPROVAL PAGE

The faculty listed below, appointed by the Dean of The Conservatory of Music and Dance have examined a thesis titled “Press Start: Narrative Integration in 16-bit Video Game Music,” presented by Justin Daniel Sextro, a candidate for the Master of Music degree, and certify that in their opinion it is worthy of acceptance.

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CHAPTER 1

PRESS START TO BEGIN: AN INTRODUCTION TO VIDEO GAME MUSIC AND STATEMENT OF PURPOSE

To some, the cultural impact of video games might seem inconsequential, hardly worth any serious thought.¹ Yet video games are currently reaching more people than ever. According to the Entertainment Software Association, about 155 million Americans play video games, and over half of American households own a dedicated game console.² In 2014, the video game industry generated \$22.41 billion of revenue. Coupled with this economic impact is a major change in the way video games are consumed: 2014 was the first year in which digital game sales surpassed hard-copy disk based formats.³ Additionally, smartphones have become increasingly ubiquitous, creating a much broader user base for developers and easier access for consumers. The very definition of “gamer” has expanded from the stereotypical teenage boy feverishly playing games in the basement to anyone who plays casually on their phone for a moderate amount of time.

Video game music has also experienced radical changes in the way it is consumed, experienced, and composed. The internet and video streaming websites such as YouTube and Twitch have made it possible to watch and listen to a game without interacting with it (this concept of an interactive medium turned passive is worth several studies by itself). Game music has also left the confines of its respective games and previous hardware limitations. In

¹ For instance, James Newman describes the popular perception of games as violent, or a ‘colossal waste of time,’ as described by psychologist Benjamin Spock. James Newman, *Playing With Videogames*, (New York: Routledge, 2008), 1-2.

² Ipsos MediaCT, “2014 Essential Facts about the Computer and Video Game Industry,” Entertainment Software Association, April 2014, http://www.theesa.com/wp-content/uploads/2014/10/ESA_EF_2014.pdf.

³ Ibid.

a genre called Chiptune, both professional and amateur musicians compose music which strives for the aesthetic of early gaming music, accomplished by modifying existing hardware to allow input from outside composition programs.⁴ In Chiptune, the “bleeps” and “bloops” of old video game sound chips are considered as much an instrument as any live acoustic one. Video game music has also entered the concert hall. Programs such as Video Game Music Live travel to different orchestras, presenting the game music from the 1980s through the present. This traveling orchestral concert has caused an interesting shift in audience attendance, bringing groups who do not usually attend such events out to hear an orchestra’s take on some of their favorite music.

Behind the cultural impact of video game music are composers, musicians, sound designers, and audio directors who have dedicated themselves to this genre of music. Contemporary game composers enter the field from diverse backgrounds and nationalities, but it was not so long ago that game music would not have been considered an option for a creative outlet. This study will focus on a small subset of video game music from the early to mid-1990s, in what is called the 16-bit generation. Composers of this era occupy a unique place in game music history. It was a time of in-betweens and evolutions, a time which built off its predecessors, yet innovated in ways which would point towards the future of gaming music. Before explaining the impact of these games and the full intentions of this study, a brief historical context will be offered, followed by the current state of video game music research.

⁴ For more information on the genre of chiptune, see Chris Tonelli, “The Chiptuning of the World,” In *Oxford Handbook of Mobile Music Studies, Vol. 2*. Sumanth S. Gopinanth and Jason Stanyek, ed. (Oxford: Oxford University Press, 2014), 402-426. Also see Leonard J. Paul, “For the Love of Chiptune,” In *Oxford Handbook of Interactive Audio*. Karen Collins and Bill Kapralos, ed. (Oxford: Oxford University Press, 2014), 507-530.

A Brief History of Video Games

A video game can be broadly defined in many different ways, yet most agree that some sort of electronic visual component, combined with a user input and feedback, is necessary.⁵ Many definitions leave out sound entirely, but it is now generally accepted to be a vital part of modern gaming. Video games can trace their ancestry back to arcades, pinball, and gambling machines from the 1930s.⁶ In an effort to attract customers, the makers of these machines used loud bells and buzzers which would distinguish their games.

In 1958, Willy Higinbotham created an interactive program which ran on an oscilloscope, which he later called *Tennis for Two!*⁷ Constructed at the Brookhaven National Lab, the oscilloscope resembled a radar screen, and the graphics consisted of only one bar in the middle of the screen (the net) and a moving ball, all in a monochromatic white color. There was no accompanying sound. *Spacewar!*, created in 1962, also did not feature sound, but contained more pixels and allowed for two players to control separate ships, attempting to blow each other up, all while avoiding a gravity well in the middle of the screen.⁸

⁵ Many have grappled with the definition of video games, though a consensus has yet to be reached. For just a few arguments as to the exact definition, see Mark J.P. Wolf, ed. *The Video Game Explosion: A History from PONG to Playstation and Beyond* (Westport, CT: Greenwood Press, 2008), 3-8. Also see James Newman, *Video Games* (New York: Routledge, 2004), 8-26.

⁶ Karen Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design* (Cambridge, MA: MIT Press, 2008), 7.

⁷ David H. Ahl, "Mainframe Games and Simulations," *The Video Game Explosion: A History from PONG to Playstation and Beyond*, Mark J.P. Wolf, ed. (Westport, CT: Greenwood Press, 2008), 32.

⁸ Steven L. Kent, *The Ultimate History of Video Games* (New York: Three Rivers Press, 2001), 16-21. The creation of the first video game is still debated, since its inception around 1960 was predated by other technological jumps after World War II. The title of first video game generally wavers between *Tennis for Two!* and *Spacewar!*

In 1971, *Computer Space* became the first game to include sound effects, as well as the first mass-produced and commercially sold arcade cabinet.⁹ The player controlled a small space vessel whose aim was to shoot down enemy foes. The graphics consisted only of white pixels on a black background, but the addition of shooting and exploding noises added new dimensions of realism and immersion. A real revolution in the game industry came with the release of Atari's *Pong* in 1972 (Figure 1.1). Consisting of two rectangles (the paddles) which compete to get a rectangle (the ball) past one another, *Pong* was a simple game, yet revolutionary in terms of its popularity.

The now iconic sounds accompanying the game consist only of analog beeps, yet their function for game play was innovative. The lead designer, Al Alcorn, describes his efforts to program sound into the game, saying,

The truth is, I was running out of parts on the board. Nolan [Bushnell, Atari's founder] wanted the roar of a crowd of thousands—the approving roar of cheering people when you made a point. Ted Dabney told me to make a boo and a hiss when you lost a point, because for every winner there's a loser. I said 'Screw it, I don't know how to make any one of those sounds. I don't have enough parts anyhow.' Since I had the wire wrapped on the scope, I poked around the sync generator to find an appropriate frequency or a tone. So those sounds were done in half a day. They were the sounds that were already in the machine.¹⁰

B-flat was sounded if a player hit the ball, while the same pitch an octave below meant the ball had run into a wall.¹¹ If the ball managed to get past a player, a minor ninth above the original B-flat played. The sound of *Pong*, while not the intended cheers and boos, communicated what was happening on screen.

⁹ Collins, *Game Sound*, 8. Also see Neil Lerner, "Musical Style in Video Games, 1977-1983," in *The Oxford Handbook of Film Music Studies* David Neumeyer, ed. (Oxford: Oxford University Press, 2014), 320.

¹⁰ Collins, *Game Sound*, 8-9.

¹¹ Neil Lerner, "Musical Style in Video Games, 1977-1983," in *The Oxford Handbook of Film Music Studies* David Neumeyer, ed. (Oxford: Oxford University Press, 2014), 328.

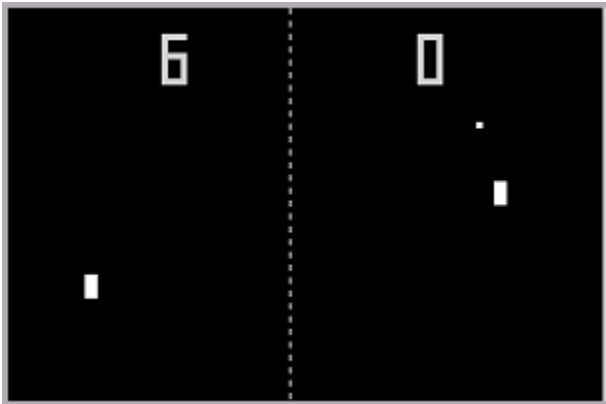


Figure 2.1 Pong, The game screen of Atari's Pong, released for arcades in 1972 and home consoles in 1977.

The popularity of video games began to skyrocket after *Pong*, which spurred the development of more games. Atari began producing numerous other arcade cabinet games, while other companies entered the market with cabinets of their own. The next major development for the industry came with the introduction of the home video game console. Though Ralph Baer had produced one the same year of *Pong*'s arcade introduction,¹² home consoles only gained real legitimacy in the market with Atari's VCS, also called the Atari 2600. The 2600 used innovative interchangeable cartridges, which allowed multiple games to be played on the same console, and drove prices down in both production and consumption. Its TIA chip was capable of producing only two melodic lines which were difficult to tune.¹³

¹² Wolf, *The Video Game Explosion*, xvii. Baer's console, the *Magnavox Odyssey* was produced in 1972. It featured no sound and only primitive, monochromatic graphics which relied on plastic screen overlays to simulate games. Baer later filed and won a suit against Atari for producing the idea of *Pong* first.

¹³ Karen Collins, "From Bits to Hits: Video Game Music Changes its Tune," *Film International* Vol. 12 (2005), 4. The sound of the 2600 was powered by a TIA chip, which contained two channels run by a 5-bit frequency controller. The controller produced pitches by counting down from the system's internal clock, which meant that many pitches were not in tune with one another and made programming melodies extremely difficult. Added to this, music on the 2600 was often reserved little or no room on the cartridges, which effectively meant that any music was limited to title screens or special in-game sequences and often only consisted of short, atonal sounding figures.

Nevertheless, it was a huge improvement over home consoles of the past, and the novelty of playing *Pong* and other arcade classics at home sold well. Though the 2600's release in 1977 was concurrent with the first major crash of the video game industry, Atari survived and achieved a huge share on the market with hit releases in the following years. In 1980, Atari licensed the first game with continuous melodic music, *Space Invaders*, which further increased the company's popularity.¹⁴

Until 1983, Atari and its competitors enjoyed a huge boom in video game sales, a heady time which ended abruptly during the holiday season of that year with the second and largest crash in video game history. Often attributed to overproduction of sub-par games,¹⁵ Atari was unable to weather this crash, and though it remained in the gaming industry for many years, the company would never regain its dominance.

The failure of so many American game companies left a vacuum in the industry. Though most of the public and American retailers were wary of video games, a Japanese company called Nintendo charged ahead and breached the market with the introduction of the Nintendo Entertainment System in 1985.¹⁶ A combination of improved technology, shrewd business tactics, and remarkable games enabled Nintendo to gain a stranglehold on the American video game industry in the mid-1980s. The NES was a huge technological improvement over any of its predecessors. Unlike many previous home consoles, the NES contained a dedicated programmable sound chip, with five channels for sound and music

¹⁴ Collins, *Game Sound*, 12.

¹⁵ Blame for the crash is often placed entirely on the licensed version of *E.T. The Extraterrestrial*. It is infamously known in game history as one of the worst games ever made, and it was recently discovered that Atari buried unsold copies of the game in a New Mexico dump.

¹⁶ The system was renamed for its American release. It was originally called the *Famicom* in Japan.

production. The channels included two square pulses, one triangle pulse, a noise channel, and a limited sampling channel.¹⁷ The CPU contained two kilobytes of RAM and 48 kilobytes of ROM.¹⁸ With the addition of some add-on chips, the NES became the first console to feature a save state, allowing the player to continue games at another time; thus, developers were able to create longer games.¹⁹ Since the crash of 1983, vendors in the US were dubious of trying to sell the stigmatized video game. To circumvent this fear, Nintendo released several peripherals to accompany the NES, and marketed their game system as a multi-purpose entertainment system.²⁰

The increased technological capacity of the NES allowed developers and composers to create revolutionary games. The NES was released in North America and eventually bundled with a dual cartridge game, *Super Mario Bros./Duck Hunt*. The game design of *Super Mario Bros.* (see figure 1.2) featured simple rules yet tight controls, all of which were easy to learn and hard to master. Previous consoles, such as the Atari 2600, were only able to support limited amounts of sound and musical effects. Little to no harmonizing lines could be included, and the reduced range restricted melodies to specific tropes and emphasized intervals such as the minor second.²¹

¹⁷ Nathan Altice, *I Am Error* (Cambridge, MA: MIT Press, 2015), 253-4.

¹⁸ Dominic Arsenault, "System Profile: The Nintendo Entertainment System" in *The Video Game Explosion: A History from PONG to Playstation and Beyond* (Westport, CT: Greenwood Press, 2008), 112.

¹⁹ Altice, *I Am Error*, 164-7.

²⁰ Jeremy Snead, *Video Games: The Movie*, Documentary (New York: VHX Corporation, 2014). The peripherals included R.O.B., and robot companion which functioned with a handful of early games and the zapper, a gun which used light to interact with the screen.

²¹ Karen Collins, "Flat Twos and the Musical Aesthetic of the Atari VCS." *Popular Musicology Online*. Issue 1 (2006), <http://www.popular-musicology-online.com>.

The increase to five channels opened new opportunities for composers. Written by Koji Kondo, the opening music to *Super Mario Bros.* was the first continuous piece of music written for a video game by a professional composer.²² With four channels,²³ Kondo was able to produce coherent original music which further increased the immersive quality of the game and integrated itself more fully into the function of game mechanics and narrative. The opening music for Level 1-1 of *Super Mario Bros.* (seen in Figure 1.2) has now become an icon of video game sound and is probably the most recognizable piece of music in any video game.²⁴ The cue is made up of four distinct sections characterized by syncopated rhythms and percussion, giving the music a Caribbean feel. The melody was played by a pulse wave channel, while the other pulse acted as a countermelody. These were supported by a funky bass line triangle and groovy noise channel percussion.

²² Melanie Fritsch, "History of Video Game Music," *Music and Game: Perspectives on a Popular Alliance*, Peter Moormann, ed. (Munich: Springer Fachmedian Wiesbaden, 2013), 19.

²³ Music and sound still had to share the same channels. Therefore, one channel was given to Mario's jumping sound effects.

²⁴ Neil Lerner, "Mario's Dynamic Leaps," in *Music in Video Games: Studying Play*, ed. K. J. Donnelly, William Gibbons, and Neil Lerner. Routledge Music and Screen Media Series (New York: Routledge, 2014), 26.



Figure 1.2 The first level of *Super Mario Bros.* on the Nintendo Entertainment System.

The end of the 80s and early 90s saw a shift in the setting of video games from the arcade to the home. Gamers increasingly began to turn to home consoles and personal computers, which offered games which could match the quality of technology and gameplay previously only held in the arcades. Nintendo's first real competitor came from another Japanese company, Sega, and their more advanced home console, the Genesis. The Genesis was the first real 16-bit machine, outclassing the NES in graphics, depth of gameplay, and musical capabilities. 16-bit refers to the processing power of the console's CPU, or how many bits it can handle at once.²⁵ The system used Frequency Modulation Synthesis, allowing composers to simulate closely the sound of acoustic instruments. Sega managed to steal much of Nintendo's consumer base with its focus on an older audience, all under the slogan, "Sega does what Ninten-don't!" The rivalry sparked an arms race, commonly known as the Bit Wars, in which each company strove for better looking graphics, improved sound,

²⁵ The first 16-bit machine was the *Turbografx-16*. However, this distinction is often rejected as the processor was actually just two 8-bit CPUs working in tandem. For more information on computer power and bit processing, see Collins, *Game Sound*, 13-15.

and more impressive games. Nintendo responded with its own 16-bit machine, the Super Nintendo Entertainment System. The end of the 90s saw several other companies enter the Bit Wars, most notably Sony and Microsoft. Sound capabilities also progressed during the 90s from analog oscillators to digital techniques, FM synthesis, and finally, MIDI and CD quality music. Sony's Playstation, a 32-bit machine, was able to produce 24 MIDI capable voices simultaneously. As technological constraints were increasingly lifted, composers were able to emulate acoustic instruments with greater accuracy, and create large scores with fewer limits to timbre, texture, or time. The push towards realism in both graphics and music can still be felt in modern gaming.

The 2000s saw an increased splintering of the video game consumer base, as more ways became available to access video games. With the introduction of the smartphone, mobile gaming introduced many non-gamers to video games, and changed the concept of gaming to a shorter, more accessible form of entertainment. The new millennium also brought about the decline of several video game juggernauts. Atari made several attempts to reenter the market during the Bit Wars of the 90s, but was unable to regain much of their former success, and was eventually sold. Sega was also forced to exit console production due to increased pressure from other companies and several poor-selling systems. The competition among home consoles was reduced to three companies: Nintendo, Sony, and Microsoft. These companies are the dominant home console game manufacturers today, though sales are increasingly challenged by PC and mobile gaming.

The current landscape of games is an interesting mix of companies, innovations, and traditions. The Bit Wars continue in spirit, if not in name, as the three remaining major console producers endeavor to push the limits of hardware and expand the definition of a

video game console by adding other media features. The major game developers still push for realistic and cinematic games, while simultaneously shortening the time for development. Smaller developers have found a niche in indie (independent) games, which have a much smaller budget and scope, yet are freer to experiment with gameplay. Many video games are now played on smartphones. These games are consumed in small chunks and have a relatively easy entry point, allowing companies to reach players who usually would not purchase a dedicated console. Mobile gaming has interesting implications for video game music, as most games are required to function without it in order to facilitate playing on-the-go during travel or amongst other people. Gaming companies continue to push the medium in new directions, either by catering to a mainstream audience, sticking to a niche player base, or discovering new ways of playing games altogether. As technology continues to improve, developers and composers have to adapt to the changing landscape of the medium.

*State of the Research*²⁶

The field of video game music research is still young, and most of the significant contributions have been written within the last fifteen years.²⁷ The first major authors to tackle the subject include Axel Stockburger, Zach Whalen, and Karen Collins. Stockburger argues that the sound of video games has been overlooked in the construction of a game environment. To support his argument, he attempts the first categorization of video game

²⁶ In this portion of the study, articles from several collections will be discussed. For the purpose of continuity and flow, some articles will be discussed with their collections while others will be moved nearer the examinations of other articles by their respective authors.

²⁷ I use Ludomusicology and Video Game Music Research interchangeably, though some in the field prefer one or the other, or try to avoid the labels altogether.

sound, which he splits into five distinct categories of sound objects: Speech, Effects, Zone, Score, and Interface.²⁸ Sound objects can construct the game environment by supporting or even creating the narrative through speech or sound effects. They can also create a sense of immersion (zone and score sound objects) even while supporting the gameplay mechanics (interface). Stockburger deems the score as a “very complex area” and only considers its spatial orientation.²⁹ Yet even in passing he mentions music’s key role in creating emotional and immersive connections.

The next attempt to categorize game music’s function was Zach Whalen’s 2004 article, “Play Along: An Approach in Video Game Music.”³⁰ Whalen discussed music’s contribution to the game narrative. He also set up the groundwork for many future trends in video game music discussion, including the similarities and differences between film and video game music, sound’s effect on immersion, and the importance of interactivity. His comparisons to film music include the use of terminology, such as diegetic and nondiegetic, as well as the concept of mickey-mousing, in which the music follows the actions of a character exactly.

Whalen offers several functions of gameplay. Music, in Whalen’s argument, serves to convey information regarding the game world to the player, motivate the player into action, identify areas in the game world, increase immersion, and create a pervasive mood. One of

²⁸ Axel Stockburger, “The Game Environment from an Auditive Perspective,” Thesis, Paper presentation at Level Up: Digital Games Research Conference, Utrecht, NL, 2003, 3-7.

²⁹ Ibid., 7.

³⁰ Zach Whalen, “Play Along: An Approach to Video Game Music.” *Game Studies* Vol. 4, Issue 1 (November 2004).

Whalen's examples, *The Legend of Zelda: Ocarina of Time*,³¹ contains all of these musical characteristics. This game revolves around the journey of a young boy named Link, who must travel through time in order to save the land of Hyrule from the evil Ganon. The player navigates from a perspective just over Link's shoulder, giving the illusion of a 3D world. Link journeys through Hyrule, which contains several dungeons filled with puzzles and prizes, allowing him to progress even farther. As Link traverses the game world, the music changes as he enters each of these environments, and each is portrayed with its own musical identity and, as Stockburger might say, zone sound objects. For example, the fire temple is characterized by a mix of percussion and chanting, which match the religious origins presented in the graphics.³² As Link progresses, the music will often change to a low timbres set in fast rhythms if, say, an enemy approaches. Without needing to see a character model on screen, the player knows that danger is near through the music.

Around the time of the previous two articles, Karen Collins entered the field with her first paper regarding video game music. This was the first of Collins' many subsequent additions to ludomusicological literature, later including the first monograph on video game music, several editing roles, and numerous articles covering a wide range of topics from sound studies to the use of popular music in games. Since Collins' output is quite prodigious, only a handful of her articles and overarching ideas will be addressed here.

Published in 2005, "From Bits to Hits" discusses the history of video game audio by splitting it into three sections: the 8-bit generation and its predecessors, an "in-between"

³¹ *The Legend of Zelda: Ocarina of Time*, Eiji Auonuma, Shigeru Miyamoto, and Yoichi Yamada, dir. Koji Kondo, composer, (Nintendo, 1998).

³² The Chanting in *Ocarina of Time* was later removed by Nintendo, since the original song resembles an Islamic prayer.

generation, and the advent of CD quality and lessening of technological constraints.³³ Even in this early article, Collins lays out some of the common tropes found throughout her research. The article as a whole is based on her focus of technological constraints as a main stylistic influence on game music. She also touches briefly on the use of popular music in games, a subject she explores more deeply in her subsequent work. Even in this early article, however, the 16-bit generation is deemed an “in-between” series of games, and is only given three paragraphs of text.

Collins sets down a framework for the categorization of game audio in her next entry, and also discusses the difficulties in composing dynamic, or changeable, music.³⁴ Collins divides games audio into six distinct categories, which begin with the already established diegetic and nondiegetic categorizations of film audio.³⁵ Diegetic sound or music, put most simply, is a source of audio which comes from the world of the narrative. It is a part of the film or game world and often perceivable by the on-screen characters. Nondiegetic sound is usually off-screen, and is most often associated with the underscore of a film, which the characters are unable to perceive. Under each heading, Collins gives three subcategories of games audio: interactive, adaptive, and nondynamic. Interactive sound is audio which the player can directly manipulate, whether by pushing a button or moving an avatar in certain ways. Adaptive audio changes according to in-game states and not the player’s direct actions.

³³ Karen Collins, “From Bits to Hits: Video Game Music Changes its Tune,” *Film International* Vol. 12 (2005), 4-19.

³⁴ Karen Collins, “An Introduction to the Participatory and Non-Linear Aspects of Video Game Audio,” in *Essays on Sound and Vision*, ed. Stan Hawkins and John Richardson (Helsinki: Helsinki University Press, 2007), 263-298.

³⁵ See Claudia Gorbman, *Unheard Melodies: Narrative Film Music* (Indiana: Indiana University Press, 1987).

For instance, in *Super Mario Bros.*, if too much time has passed while the player tries to reach the end of the level, the musical cue speeds up, indicating to the player that time is running out. This type of change is dependent on the in-game timer and not on any action which the player might take. Finally, nondynamic audio is a linear cue unable to be changed. Each of these subcategories can be either diegetic or nondiegetic. The underscore of a cut scene, where the player is not in control but watches the story unfold like a movie, would generally be nondynamic, nondiegetic audio since it is unable to be changed and its source does not appear onscreen. On the other hand, the whoosh of an avatar's sword would be diegetic and interactive since the player is in control of the cue and the source of the sound is displayed on-screen.

In 2007, Collins published an article which called for a change in the approach to video game music research.³⁶ Reacting against the stigma of game music as simple and just for kids,' she suggested several aspects which had thus far been untouched. A few examples included the impact of nostalgia on game music, reception and semiotic relationships of hearing game music, ethnographic studies of gaming culture, and other interactive media such as cell phones. As if in response to Collins' call for diversified work, several important scholars threw their hats into the ring of ludomusicology during 2007 and 2008. The latter year was also accompanied by the first video game music monograph, penned by Collins, as well as a compilation of articles concerning games audio, edited and contributed to by Collins.

³⁶ Karen Collins, "Video Games Killed the Cinema Star: It's Time for a Change in Studies of Music and the Moving Image," in *Music, Sound, and the Moving Image* Vol. 1, Issue 1 (Spring 2007), 15-19.

Rob Munday and Zach Whalen take on the subject of game music in a section devoted entirely to the field in *Music, Sound, and Multimedia*.³⁷ Munday kicks off his study of the function of game music by declaring that video game music no longer exists due to the increase of technological capabilities which now allow live orchestras and full symphonic scores to be used. He divides the use of modern game music into three categories: environmental, immersion, and diegetic. He early on admits that little data is available to do much more than set up a theory upon which others might expand. He does touch, however, upon the subject of virtuality and video game music, an idea further explored by Mark Grimshaw.

Whalen's portion of the study returns to a game from his previous article, *Silent Hill*, for a more in depth analysis. Immediately, Whalen states his intention to study only this game, and that generalizations (from even his own previous study) of video game music are too rigid. Also in contrast to his previous study, the author uses the Unit Operations approach of Ian Bogost, which looks at individual pieces of the game within the whole.³⁸ The game revolves around the protagonist, Harry, who ventures into a mysterious, fog-covered town in order to find his daughter. Unfortunately, the town is filled with apparitions and monsters. To navigate the town, Harry makes use of an old radio, which produces static if a monster approaches him. The radio blurs audio diegesis, as it is evidently perceivable to Harry, yet communicates vital gameplay information to the player which she or he can use to avoid taking damage. Whalen analyzes the radio and general music of *Silent Hill* by looking at individual Unit Operations. The background music, for example, is composed of small loops,

³⁷ Jamie Sexton, *Music, Sound, and Multimedia: From the Live to the Virtual* (Edinburgh:Edinburgh University Press, 2007).

³⁸ Ian Bogost, *Unit Operations: An Approach to Videogame Criticism* (Cambridge, MA: MIT Press, 2006).

which themselves consist of various noise and low-range instruments. As Harry progresses through the village, objects he encounters trigger other loops, and often culminate in terrifying stingers, a traditional staple of horror films.

The first collection of studies dedicated to video game music came under the editorship of Collins.³⁹ These twelve articles vary in subject matter, ranging from uses of popular music in games to compositional practices and emerging technological platforms. One example is Kristine Jørgensen's article, which discusses the critical role of music during gameplay, demonstrated through an experiment in which music is cut from gameplay of *Warcraft III* and *Hitman Contracts*. The players then reported their observations. Jørgensen discovers that, for most players, the lack of music during gameplay took away key indications of gameplay status, which hindered their sense of control over the game. Additionally, many of the gamers reported a lessening of emotional connection and immersion, reducing the amount of enjoyment experienced during the session. One participant stated, "I knew I thought it's duller to play without sound. But I didn't know I would think it affected the game so much."⁴⁰

Karen Collins' book, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music Sound Design*, solidified the foundation for many of the trends in current ludomusicology, including the focus on the impact of technology in musical

³⁹ Karen Collins, ed. *From Pac-Man to Pop Music: Interactive Audio in Games and New Media* (Burlington, VT: Ashgate, 2008).

⁴⁰ Kristine Jørgensen, "Left in the Dark: Playing Computer Games with the Sound Turned Off," in *From Pac-Man to Pop Music: Interactive Audio in Games and New Media*, Karen Collins, ed. (Burlington, VT: Ashgate, 2008), 167.

aesthetics, function, and form, and the application of film theory terminology.⁴¹ It also made use of several of her previous arguments. Consisting of eight chapters, the first four briefly cover the history and application of video game audio, including sections for consoles and PC gaming. The second half of the book explores several specific topics, such as the process of composition, licensed music in gaming, and the functions of game audio.

The third chapter of her book presents several important platforms for discussing style and narrative in the 16-bit generation. She gives several cultural and technological influences on the stylistic choices of this generation. For Collins, technological advances and limitations are defining features of video game musical style, especially in the earlier generations. Many of the specific stylistic conventions of the 16-bit era were carried on from the previous generations. To accommodate the lack of memory in early systems, composers employed standardized use of voices and looping. The third generation Nintendo Entertainment System often used the five channels available in specific ways. Three channels were used for the main melody, secondary melodic accompaniment, and a bass line. A fourth channel producing white noise was used for percussion, and the last channel was saved for sound effects. In addition to the orchestration, the song form of the games was also standardized. Large-scale forms were impractical due to the small memory and time for composition, therefore, music tended to be composed of short four-to-eight bar phrases in periodic forms such as ABBC. According to Collins, these conventions carried over into the 16-bit games. Where the Genesis and Super Nintendo Entertainment System overcame the previous consoles was in their ability to simulate real instruments through advanced chips. Through FM Synthesis, these consoles were able to manipulate a single sound wave through

⁴¹ Karen Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design* (Cambridge, MA: MIT Press, 2008).

multiple oscillators. Some instrument sounds were more adaptable to FM Synthesis than others, so many games on the Genesis reused sounds. Adding to this was the high difficulty of programming sounds into the Genesis. Collins explains the aesthetic of the Genesis sounds, saying, “More significant, though, is that elements of progressive rock instrumentation entered the Genesis sound. Since the chip could somewhat accurately mimic the common progressive rock instruments, it is perhaps not surprising that a progressive rock sound was used.”⁴²

In the seventh chapter, Collins argues that the function of game audio, though affected by technology limitations and industry needs, is also “affected by the nature of games themselves, in terms of genre, narrative, the participatory aspects of games, and the functions that audio must fulfill.”⁴³ Genre can impact the way in which a player approaches a game, and also enforce past experiences with games which then informs the player regarding gameplay and controls. For example, a player who buys a game labeled as a racing genre will not expect the controls to handle like a platformer such as Mario.

The final chapter discusses some of the challenges faced by game composers. Composers such as Koji Kondo are well aware of the limitations and stereotypes of video game music as repetitive “bleeps” and “bloops.” The biggest challenge for many composers is nonlinearity. Since players are free to progress through games as quickly or slowly as desired, listener fatigue and interactivity become real problems. Collins lists several musical traits which can be varied and changed in order to sustain interest without necessarily having

⁴² Collins, *Game Sound*, 43.

⁴³ *Ibid.*, 123.

to compose a seemingly infinite amount of music. These include variable tempo, pitch, rhythm, volume, and many other musical attributes.

Programmers of the NES and contemporary consoles often saved time by using public domain classical compositions in place of newly composed pieces. In addition, the songs lent themselves to looping due to their extant periodic form. William Gibbons discusses the success and failures of the use of classical music in three NES games: *Captain Comic*, *Pirates!* and *Tetris*.⁴⁴ He finds the adaptations of the first two selections to be lacking. *Captain Comic* essentially uses music which is public domain to cut corners in game music development. *Pirates!* fares slightly better by attaching some connection between game environments and their music. Yet those connections are superficial, relying on well-known stereotypes of classical music to place the player in medieval times with Baroque music. The final entry, *Tetris*, Gibbons finds to be a much better use of classical canon. The tune borrowed from Tchaikovsky, a Romantic era composer, subtly expresses a hidden political message regarding the dispute over the ownership rights of the game.

Gibbons penned another study of licensed music in video games two years later.⁴⁵ It focused on the narrativistic integration of licensed music in a much later game, *Bioshock*.⁴⁶ To accompany a desolate, undersea city set in the 50s, contemporary popular music is used to supplement the sparse score, with an often unnerving effect. Some narrative integration is on the nose, such as the use of the song, “Beyond the Sea.” Other songs provide an

⁴⁴ William Gibbons, “Blip, Bloop, Bach? Some Uses of Classical Music on the Nintendo Entertainment System” *Music and the Moving Image*, Vol. 2, No. 1 (Spring 2009), 40-52. Gibbons is currently working on a book which describes similar subject matter in greater detail.

⁴⁵ William Gibbons, “Wrap your Troubles in Dreams: Popular Music, Narrative, and Dystopia in *Bioshock*” in *Game Studies* Vol. 11, Issue 3 (December, 2011).

⁴⁶ *Bioshock*, Ken Levine and Alyssa Finley, dir. Garry Schyman, composer (2K Games, 2007).

anempathetic, or ironic, quality to the dystopian gameplay, with upbeat or downright cheery songs accompanying images of graphic violence. The use of licensed popular or classical standards in video games is now a rather ubiquitous idea and will be discussed more fully in the following chapters.

Isabella von Elfren argues that the virtual environments of music and video games are actually separate entities, which serve to increase the immersive and diegetic qualities of the game. The result of music's separate virtuality means that it can break out of and extend the diegesis of the game. "My argument is that music creates its own virtuality and its own flow, quite independently of those of the computer game but complementing and intensifying it."⁴⁷ Again, what makes video game music unique is its interactivity. If the music of a horror film were taken away, the film would cease to be frightening. If the same procedure were followed in a horror game, the musical feedback upon which the player relies would render the game unplayable.

To delineate the role of game music, von Elfren reworks terminology to include the familiar diegetic and nondiegetic categories, as well as what she terms halfdiegetic (diegetic sounds mixed with nondiegetic music) and interface sounds (functional sounds, such as music indicating the death of an avatar). This split in terminology leaves room for the gameplay functions of all game audio. The author gives an example in *Resident Evil IV*, a horror game in which the protagonist, Leon, must brave a town of zombie-like creatures in order to save the president's daughter. As the townspeople attack Leon, they often preempt the strike with a scream of "Un Forastero!" This scream is diegetic and understandable to the avatar. However, it is always accompanied by nondiegetic music, which is only heard by the

⁴⁷ Isabella Von Elfren, "¡Un Forastero! Issues of Virtuality and Diegesis in Video Game Music," in *Music and the Moving Image*, Vol. 4, No. 2 (Spring 2011), 31.

player and indicates a state of danger. The combination of diegetic sound and nondiegetic music is termed by von Elfrén as halfdiegetic. If Leon is unfortunate enough to be overcome by the zombie hordes, the resulting death screen would contain interface music.

Several scholars collaborated on the 2012 German collection *Music and Game*. Included in its pages are studies on the live performance of game music, the introduction of iMuse technology from the 90s, and the business side of video game composition. One of the most agreed upon concepts in the narrative function of video game music is its ability to create a unique atmosphere or mood. Gregor Herzfeld provides a general statement as to how music accomplishes mood, saying, “The atmospheric attitude is more 'superficial' in a neutral sense of the word. It allows very basic features of music, such as the key mode, the use of instruments and instrumental colours, the employment of consonances and dissonances, the association with genres, eras, the general tempo, forms of movement, and codified emotional contents, to dominate the sense of hearing and its affective responses.”⁴⁸ He goes on to explain that video games must take this further by spurring action, while at the same time staying out of the way and not becoming so repetitive as to be annoying.

In the same volume, Leonard Paul explains the types of scores and transitions possible in a game score in his contribution to *Music and Game*.⁴⁹ Three main types of scoring techniques are used: branching, layering, or a combination. Branching segments are small chunks of music which can be added interactively as the player progresses through the

⁴⁸ Gregor Herzfeld. “Atmospheres at Play: Aesthetical Considerations of Game Music,” in *Music and Game: Perspectives on a Popular Alliance*, Peter Moormann, ed. (Munich: Springer Fachmedian Wiesbaden, 2013), 151.

⁴⁹ Leonard J. Paul, “Droppin’ Science: Video Game Audio Breakdown,” in *Music and Game: Perspectives on a Popular Alliance*, Peter Moormann, ed. (Munich: Springer Fachmedian Wiesbaden, 2013), 63-80.

game. Layering music is the overlay of two or more pieces of musical material. The last category is a combination of both techniques. Paul discusses the types of musical transitions used to move between pieces as a player progresses through a game. A few examples include the fade in and fade out, in which the volume of one piece is reduced while another is raised. This transition forgoes the need to create extra musical connections between cues. Transitions which commonly occurred in older games are “butt” edits, or hard edits. These are direct cuts between two cues, with no filler material.

So far, the type of music discussed in each study has been in the background, a score which is, in most cases, subservient to game play. Some games, however, place music at the center of the gameplay mechanics. Music rhythm games, such as *Rock Band*⁵⁰ use a type of input which Collins calls kinetic gestural interactivity.⁵¹ In *Rock Band*, the player is put in the place of a rock musician by replacing traditional controllers with simplified, plastic instruments. The goal of each game is to play the music by inputting the correct button commands as they appear on screen. *Rock Band* comes with several types of input, including a controller which is shaped like a guitar. It has five buttons on the neck, as well as a lever and switch which serve to simulate the effect of strumming.

Kiri Miller’s *Playing Along* deals at length with this form of interactivity in an ethnomusicological study of several games.⁵² Kinetic gestural interactive games blur the lines between live and recorded music. The tracks which are presented are prerecorded, yet are unable to play without the input of the gamer. If the player makes mistakes, the music

⁵⁰ *Rock Band*, Greg LoPiccolo, Rob Kay, and Dean Teasdale, designers, (Harmonix, 2007).

⁵¹ Collins, *Game Sound*, 127.

⁵² Kiri Miller, *Playing Along: Digital games, YouTube, and Virtual Performance*, (Oxford: Oxford University Press, 2012).

stops and dissolves into dissonant guitar screeches, very similar to a real musician making a mistake on his or her instrument. This type of interactivity is one of the most controversial, especially in regards to questions of authenticity. The argument most cited by critics is the number hours spent practicing *Rock Band* would be better used in actually learning the guitar.

The biggest question related to games employing kinetic gestural interactivity is the musical qualities present in these games. There is no doubt that tracks on *Rock Band* are prerecorded creations of the original artists, yet, as stated above, they would be unable to function without the input of the player. Where then, does the line between music and game fall? If the player decides not to input any directions to the game, and no music plays audibly, can the music be said to still exist? Miller presents the arguments of proponents of kinetic gestural games, which says at worst the games are just games. In the best case scenario, however, these games can be a platform for better listening, a way for non-musical people to engage with music, and a starting point for those interested in actually learning how to play an instrument.⁵³ A counter to Miller's argument is Michael Custodis's essay in *Music and Game*, in which he studies the effects of games on the live performance and composition worlds. He concludes that the "final step from a perfect simulation into the real world will nevertheless be always out of reach, the enthusiastic audience will always be a virtual one, as long as the controllers - being toys, not tools, in a performed technical setting - are engineered reductions of a much more complex system."⁵⁴ *Rock Band*, in Custodis's view,

⁵³ Miller, *Playing Along*, 100-102.

⁵⁴ Michael Custodis, "Playing with Music: Featuring Sound in Games," in *Music and Game: Perspectives on a Popular Alliance*, Peter Moormann, ed. (Berlin: Springer, 2012), 167.

can never achieve a real sense of musicality, and will not serve to boost listening or elevate the player to a real instrument, as Miller has stated.

The dividing line between music creation and video game is still under debate. Many scholars, such as Miller, say that games such as *Rock Band* are only harmless distractions, but can serve to elevate the player's musical sensibilities. Others, represented by Custodis, argue that *Rock Band* can never serve a role in music creation, since the simulation is always a simpler version of the real process of composing and performing.

Roger Moseley and Aya Saiki take the kinetic gestural quality of video games one step further by arguing that all video games are inherently kinetic musical instruments.⁵⁵ To illustrate their point, they discuss the consoles of Nintendo. According to these authors, game systems such as the Game Boy or the Nintendo 3DS have their own set of timbres and pitch sets which are activated by playing the games. They call this type of interactive music making ludomusical.⁵⁶ An example they give is the ocarina from *The Legend of Zelda: Ocarina of Time*. Playing the ocarina instrument is a requirement for completing certain tasks in the game. The songs which need to be played are usually limited to six note melodies. However, the player is free to play many additional notes, which “facilitates a strictly musical performance by way of the [Nintendo 64] controller.”⁵⁷ The on-screen action and musical cues of most games are directly linked, and since the player of these games is responsible for progression of the game's action, Moseley and Saiki believe that the controller of a console can be just as musical as any live performance on an instrument.

⁵⁵ Roger Moseley and Aya Saiki, “Nintendo's Art of Musical Play,” in *Music in Video Games: Studying Play*, ed. K. J. Donnelly, William Gibbons, and Neil Lerner. Routledge Music and Screen Media Series (New York: Routledge, 2014), 51-76.

⁵⁶ *Ibid.*, 55.

⁵⁷ Moseley and Saiki, “Nintendo's Art of Musical Play,” 55.

In a self-proclaimed follow up to her first work, Karen Collins reentered the field in 2013 with another book entitled *Playing with Sound*.⁵⁸ Her main aim with this entry was to shift the focus of study from the point of view of the author (the game developers, composers, designers, etc.) to the audience (the player). Video games jumble the traditional relationship between author, text, and audience, since, as Collins puts it, a game without a player “is just code lying in wait.”⁵⁹ Collins explores video game music from a player’s perspective primarily by studying the effects of interactivity on immersion, identification, and sounds beyond the game diegesis, combining standard musicological analysis with embodied cognition and practice theory. She ultimately finds the player relationship to interactive sound (specifically game sound) different from other, noninteractive sound. “Interactivity thus encourages new ways of listening in which players contribute to the sonic environment through their own selecting, shaping, and creating of sound.”⁶⁰

Recent years have seen the release of several volumes devoted to video game audio study, as well as a diversification of platforms in which video game music is studied. This inclusion of video game music study, as well as the ever-expanding number of authors engaging with the subject, marks a turning point for the serious consideration with which video game music is being approached. Rob Bridgett holds a unique perspective as a game audio director.⁶¹ He reports that the main differentiation between game and film sound is the

⁵⁸ Karen Collins, *Playing with Sound: A Theory of Interacting with Sound and Music in Video Game* (Cambridge, MA: MIT Press, 2013).

⁵⁹ Collins, *Playing with Sound*, 2.

⁶⁰ Ibid., 144.

⁶¹ Rob Bridgett, “Contextualizing Game Audio Aesthetics,” *The Oxford Handbook of New Audiovisual Aesthetics*. John Richardson, Claudia Gorbman, and Carol Vernallis, ed. (Oxford: Oxford University Press, 2013).

audio director role, which, much like a film sound designer, takes charge of all sound produced by the game. Winifred Phillips, composer of many games such as the *God of War* series and *Little Big Planet*, provides another point of view from behind the scenes. For Phillips, the technological limitations of composing for video games is not an issue, but an opportunity for experiment.⁶²

In 2014, Collins coedited the *Oxford Handbook of Interactive Audio* which deals directly with the subject of interactivity. One of the authors for this volume is Mark Grimshaw, who builds off of his previous work with musical ecologies. According to him, an acoustic ecology is a set of sounds in an environment with which the player is able to interact.⁶³ Focusing on the first-person shooter genre of games,⁶⁴ Grimshaw explains that there exist two types of sound in an acoustic ecology: events, which are created by the player, and ambient, which come from the environment.⁶⁵ He concludes that not only do these sounds help the player to navigate the in-game environment, they also directly affect the player's emotions and sense of immersion. Similar to Collins' argument in *Playing with Sound*, the direct relationship which the player has with interactive sound increases its emotional resonance.

⁶² Phillips is also the author a book, *A Composer's Guide to Game Music* (Cambridge, MA: MIT Press, 2014). In it, she discusses her own experience with composing music, and offers advice to other would-be composers.

⁶³ Mark Grimshaw and Tom Garner, "Embodied Virtual Acoustic Ecologies of Computer Games," in *Oxford Handbook of Interactive Audio*, ed. Karen Collins, Bill Kapralos, and Holly Tessler (New York: Oxford University Press, 2014), 182.

⁶⁴ A First-Person Shooter is a type of game in which a pair of arms extend from the bottom of the screen, which the player controls, literally giving the player a first-person view point of the in-game action.

⁶⁵ Grimshaw and Garner, "Embodied Virtual Acoustic Ecologies of Computer Games," 183.

According to Michiel Kamp, nondiegetic music can affect the perception of goals and game structure.⁶⁶ Using Gibson's ecological approach to psychology, the author argues that listening is structured according to the rules governing the environment in which the listener finds himself. Variants are objects in the environment which remain constant as it is traversed. Affordances are objects with which one can interact. In games, the perception of affordances is affected by musical underscoring. Arguing against Grimshaw's claim that musical underscoring is not part the game diegesis, Kamp explains that nondiegetic music is part of the avatar. Since an avatar is part of the environment but also the gateway through which the player can interact, music which is perceptible to the player is also on some level perceptible to the avatar. The avatar acts as a connecting force between game and player; therefore, music is part of the diegesis.⁶⁷

Kamp illustrates these ideas using several games, including *Super Mario Bros*. That game contains music which acts as a connection between multiple diegeses created when the avatar Mario is killed or moves on to a new level. "Whereas a pit might afford jumping over to the player *through* their avatar Mario, music structures the affordances of dying directly for the player. And it is able to do so specifically because of its nondiegetic status: it can stretch over diegeses, or intercut them with introductions and cadences."⁶⁸

Another compilation was produced in 2014 which included work from film music scholars such as Kevin Donnelly and Neil Lerner. Many of the chapters deserve mention. Elizabeth Medina-Gray offers a way of composing for game music called modularity, in

⁶⁶ Michiel Kamp, "Musical Ecologies in Video Games," *Philosophy and Technology* Vol. 27, Issue 2 (June, 2014): 235-249.

⁶⁷ Kamp, "Musical Ecologies in Video Games," 243.

⁶⁸ Kamp, "Musical Ecologies in Video Games," 244.

which discrete chunks of music are engaged as the game progresses.⁶⁹ She analyzes the use of in-game instruments in two games, *The Legend of Zelda: The Wind Waker* and *The Legend of Zelda: Skyward Sword*. She finds that the implementation of in-game instruments in the latter is more effective due to its integration with the game world. Every time the avatar, Link, uses his harp, the music it produces matches in key and character with the nondiegetic underscore.

The morality and the creation of ambience is focused upon in William Gibbons' article.⁷⁰ *Shadow of the Colossus* is a game which is often called upon as an example of video games as art. The gameplay revolves around a Wanderer who endeavors to bring life back to a girl named Mono. The only way to achieve his goal is to kill sixteen giant creatures. The music brings focus to the immoral choice the player must make in order to save the girl. In many cases, the Colossus being hunted is only a wandering, gentle giant attacked by the player. Especially effective is *Shadow's* use of silence to highlight the player's choices. Music is often not present, and therefore unavailable to provide emotional guidance for the player, which leaves room for interpretation as to whether the actions of the Wanderer are right or wrong.

Returning to the horror genre, the next entry discusses the impact of music in identification and immersion. The author, Rebecca Roberts, explains that horror games such as the *Silent Hill* series mix the diegetic space of the avatar with that of the player through music. Within this shared space, "the music will increase in tension and the players will feel

⁶⁹ Elizabeth Medina-Gray, "Meaningful Modular Combinations: Simultaneous Harp and Environmental Music in Two *Legend of Zelda* games," in *Music in Video Games: Studying Play* ed. K. J. Donnelly, William Gibbons, and Neil Lerner. Routledge Music and Screen Media Series (New York: Routledge, 2014), 104-121.

⁷⁰ William Gibbons, "Wandering Tonalities: Silence, Sound, and Morality in *Shadow of the Colossus*," in *Music in Video Games: Studying Play* ed. K. J. Donnelly, William Gibbons, and Neil Lerner. Routledge Music and Screen Media Series (New York: Routledge, 2014), 122-137.

part of the diegesis mentally and often physically, through heightened adrenaline and blood pressure, as they cross over into the game interface.”⁷¹

Neil Lerner addresses the stylistic tendencies of early video games in two articles. He explains his main idea, saying, "Yet, despite this exceptional property (of a never-to-be-repeated score), the musical styles arising in video games since the 1970s have nonetheless been rooted in earlier musical traditions."⁷² Those earlier musical traditions, according to Lerner, include adaptations of cinematic musical codes for the interactivity of video games. A game he examines in both articles is the 1981 arcade game *Donkey Kong*, the first game to introduce the now iconic Mario character.⁷³ The music in *Donkey Kong* evokes its stylistic cue from film music's early history. In the absence of any accompanying sound, it was common practice to accompany silent films of the twenties with different combinations. In ideal cases, these musicians played music which matched the action on screen. If, for instance, an object fell on screen, it would be accompanied by a descending figure. Or if a villain appeared, the mode might change to a dark and brooding minor. *Donkey Kong* uses many of these codified practices. The music of the first level is characterized by a syncopated bass note figure which evokes the honky-tonk piano feel. Mario's jumps include an ascending E-flat major chord over the B-flat major harmony.⁷⁴ The entrance music of the

⁷¹ Rebecca Roberts, "Fear of the Unknown," *Music in Video Games: Studying Play* ed. K. J. Donnelly, William Gibbons, and Neil Lerner. Routledge Music and Screen Media Series (New York: Routledge, 2014), 142.

⁷² Neil Lerner, "Mario's Dynamic Leaps," in *Music in Video Games: Studying Play* ed. K. J. Donnelly, William Gibbons, and Neil Lerner. Routledge Music and Screen Media Series (New York: Routledge, 2014), 1.

⁷³ *Donkey Kong*, Shigeru Miyamoto, dir. (Nintendo, 1981).

⁷⁴ Lerner, "Mario's Dynamic Leaps," 6.

villain, Donkey Kong, is lifted from the 1950s television series *Dragnet*.⁷⁵ The *Donkey Kong* figure is a low parallel fifth motion followed by an octave trill, a cinematic music code for trouble approaching. The B-flat major tonality is maintained throughout the entire game. As Lerner says, “the *Donkey Kong* underscore actually creates a powerful thread unifying the game from start to finish, thereby defying its narrative incoherence.”⁷⁶

The final article of the compilation discusses the use of Wagnerian leitmotives in games such as *Final Fantasy VI*, a 16-bit game released for the Super Nintendo Entertainment System in 1994.⁷⁷ The music in this game uses leitmotives to identify characters, which is especially important due to the limits set by technology. Summers says, “Since character cues accompany dramatic events that involve the character in question, a character’s narrative journey is bound up with his or her musical identity.”⁷⁸ The music, in fact, was often tasked with carrying much of the narrative since, as Summers explains, games of the era had no spoken word and little in the way of Foley sound effects.

⁷⁵ Neil Lerner, “Musical Style in Video Games, 1977-1983,” in *The Oxford Handbook of Film Music Studies* David Neumeyer, ed. (Oxford: Oxford University Press, 2014), 340-1.

⁷⁶ Lerner, “Mario’s Dynamic Leaps,” 11. Lerner cites a parallel between music and game story through Jesper Juul’s categorization of story worlds. Jesper Juul, *Half-Real: Video Games Between Real Rules and Fictional Worlds* (Cambridge, MA: MIT Press, 2005). Lerner describes the categories of incomplete and incoherent game worlds. The first leaves out story information, while the second is a game world in which information can be contradictory. Lerner places the score of *Donkey Kong* as a thread of coherence in an incoherent narrative.

⁷⁷ *Final Fantasy VI*, Yoshinori Kitase and Hiroyuki Ito, dir. Nobuo Uematsu, composer (Squaresoft and Nintendo, 1994).

⁷⁸ Tim Summers, “From *Parsifal* to *Playstation*: Wagner and Video Game Music,” in *Music in Video Games: Studying Play* (New York: Routledge, 2014), 207.

A more recent study is William Cheng's book, *Sound Play: Video Games and the Musical Imagination*.⁷⁹ In five chapters, each covering one game, Cheng covers a wide range of topics regarding the effect of sound and music on gameplay, composition, perception, aesthetics, and many other platforms. The second chapter explores the sound design of *Final Fantasy VI*. One scene in particular catches Cheng's attention. Around the midpoint of the game, the characters are forced into performing an opera. This opera-within-a-play has long been famous amongst fans of the game, and Cheng investigates its implications in the game itself and the evolution of the scene into full-fledged performances. Operatic singing in the scene is simulated through synthesized voices. The voices are unable to articulate words, but instead move from note to note on vowel sounds, while text boxes appear underneath to indicate what is being said. The player takes an important role during this scene by controlling a character off-stage, who must achieve certain tasks as the opera progresses. The length of the performance depends on how well the player performs each task. For instance, before heading onstage, Celes (the character forced to sing) must review the libretto for the scene and then find the stage entrance. The player then must choose the correct words while Celes is singing.

The significance of this scene involves the emotional connection of the music and players. Cheng explains that "it is clear that fans of the FFVI aria (and of retrogame soundtracks more broadly) are devoted to this music not despite but rather largely *because* of its aesthetic constraints."⁸⁰ So devoted are some fans to the scene that live adaptations of it have arisen, although many fans might resent the live performances for being unable to

⁷⁹ William Cheng, *Sound Play: Video Games and the Musical Imagination* (New York: Oxford University Press, 2014).

⁸⁰ Cheng, *Sound Play*, 89.

replicate the charm and nostalgia of the original synthesized voices. In addition to its performance adaptations and nostalgic meaning, Cheng also discusses some narrative implications which the scene contains.

Statement of Purpose

In her landmark monograph, Karen Collins begins by stating the platforms of study which influenced the musical construction for video games throughout their history. “As will be shown, the development of game audio can be seen as the result of a series of pressures of a technological, economic, ideological, social, and cultural nature. Audio is further constrained by genre and audience expectations, by the formal aspects of space, time, and narrative, and by the dynamic nature of gameplay. These elements have all worked to influence the ways in which game audio developed, as well as how it functions and sounds today.”⁸¹ In this study, I wish to further narrow down her criteria to focus on the narrative platform as it pertains to music in the 16-bit era of home gaming consoles.

My first reason for choosing this era of gaming, which spans from 1988-1996, is to add another platform of discussion in ludomusicological literature. Video game music research is still growing, and in this young field, 16-bit era has been left relatively untapped. Scholars such as Melanie Fritsch, Karen Collins, and many others, have paved the way into 16-bit music, and this study is indebted to them, but often in the research, the era’s musical construction is presented as similar or unchanged from the previous generations. Fritsch, in describing two of the 16-bit consoles, says, “But similar to the Genesis sound, the SNES also

⁸¹ Collins, *Game Sound*, 6.

relied on the previously developed song structure of the 8-bit era”⁸² Collins states a similar point of view, focusing mostly on the technological similarities between the 8 and 16-bit eras; “Dynamic sound activity on the SNES was comparable to that of its predecessors, and the musical structures remained very similar to those of the 8-bit era, despite the increased potentials of the chips.”⁸³

The primary goal of this research is to investigate the musical construction of the 16-bit era games and uncover the ways in which they support or add to the game narrative. I will focus on games from the Super Nintendo library, in part because there is even less research on the system when compared to the Genesis. The Super Nintendo Entertainment System brought with it several games which still stand as classics in the medium. As a result of this study, I hope to differentiate this generation’s music from the previous, and show that composers were treating 16-bit era music as a unique entity.

The following chapter will lay out the main ways in which composers were using the musical capabilities of the Super Nintendo Entertainment System to support and enhance the stories of several game genres. These ways include a greater musical cohesion, identification, mood and atmospheric creation, and musical code reinforcement. With expanded capabilities and storage space, composers had more room in which to paint a musical picture and create a cohesive soundtrack which had implications for the story. New capabilities also allowed for the exploration of motivic identification of characters and areas, similar to the techniques used in cinematic music. Mood and atmosphere took a front seat in narrativity, as the new timbres afforded by the SNES allowed for more diversification and distinction. Finally,

⁸² Fritsch, “History of Video Game Music,” 23.

⁸³ Collins, *Game Sound*, 47.

composers of the 16-bit era used recognizable musical signposts to connect quickly with the listener and cross cultural boundaries. Video game musical codes were established in previous game generations and perpetuated in this generation. Choices of instrumentation, texture, mode, motives, and various other elements either conform or break away from commonly understood cultural codes, taken in part from cinematic, video game, and general music histories.

The third chapter explores two games of a specific genre, the role playing game. Taking inspiration from board games such as Dungeons and Dragons, RPGs were large in scope, typically containing epic stories with numerous characters, enemies, and areas to explore and with which to interact. Composers of these narrative-driven works were faced with the challenge of sustaining games which could last for tens of hours. The music had the power to make or break the game. As will be demonstrated through an analysis of two games, *Chrono Trigger* and *Earthbound*, composers created large scale works with unique musical cohesion across broad areas with diverse moods and atmospheres. Identification of characters, areas, enemies, and narrative themes also played a major role in the music. Finally, the juxtaposition of these two games will illustrate the awareness of musical codes, whether they were appropriated or subverted.

The final chapter directly addresses the placement of 16-bit games within the context of other generational music by detailing the similarities and differences in narrative musical construction in three games from one series, *The Legend of Zelda*. With these comparisons, I will show that 16-bit games on the SNES were not just old procedures rehashed, but a logical step in the evolution of game music composition, in which technological progress played a major, yet not controlling, part.

Narrative integration of 16-bit music is important for its place in history. Even today, many feel game music to be something different or less when compared to other genres. 16-bit composers became an essential part of a game's reception and quality, and many of the games mentioned in this study are remembered not only for gameplay and story, but for the emotional power of their music.

CHAPTER 2

SOUND AND STORY: ASPECTS OF MUSICAL NARRATIVE INTEGRATION

Left or right?

You step out of your ship into a large, open area. The only sound you hear is a distant storm raging. This sound unsettles you, yet does not remove the choice.

Left or right?

Trusting your instincts, you venture right. As you move, you hear what sounds like voices. Questions run through your mind. Where are they coming from? Is someone else here? You encounter a barrier blocking your path. How can that be? The right path usually works.

You travel back to the left path and find an underground passageway. The voices follow, even as the sound of the storm lessens. The passage is deeper than you think, yet there are various platforms you might be able to use to descend. There is something familiar about the room. As you progress deeper, the passageway straightens out. Now there are large columns blocking your way. As you scramble over, your feeling of Deja vu increases. Where have you seen these columns before?

You reach the end of the passageway and discover an elevator leading further down. With nowhere else to go, you descend into the darkness. The sound of the elevator causes the voices and the storm to recede, but where is the lift taking you?

As you step out, the voices return. Again, you are left with a choice. Left or right? This room is even more familiar, and though you know turning right is the safer choice, something in the back of your head urges you to go left. You step that way and encounter a

set of large steps. As you reach the top, you misstep and fall into a gaping hole. Trapped! You try to jump back up but it is useless. "Why did I go left?" You ask yourself.

A small light catches your eye. You turn to see a glowing orb perched on a column. You approach and touch the orb. Immediately, you feel a surge of power and triumphant music fills your ears. You know you did the right thing, and, turning back to the hole's entrance, you spot an even smaller hole you did not notice before. Somehow, you know you can fit through and escape. As you step back into the familiar-looking room, your confidence grows. The ever-present voices are back again, yet they do not seem as menacing anymore. A new energy pushes you onward. Maybe right is not always the right choice.

This imagined scene was adapted from some of the first gameplay sequences of *Super Metroid*.¹ The original *Metroid* is often considered a spiritual game version of Ridley Scott's *Alien*.² Released in 1987, it was a turning point in gaming music due to its lack of melodic based cues. Its sequel *Super Metroid* was released in 1994 and is often included amongst the greatest video games of all time.³ Besides its tighter control and advanced graphics, *Super Metroid* used music that more closely followed the narrative. While still highlighting game mechanics and interactivity, a close integration of music and story created a more immersive atmosphere, a quality which modern games still strive for today.

¹ *Super Metroid*, Yoshio Sakamoto, dir. Kenji Yamamoto and Minako Hamano, composers (Nintendo, 1994).

² *Metroid*, Satoru Okada, dir. Hirokazu Tanaka, composer (Nintendo, 1986). The parallels are many. A strong female lead traverses a dark and atmospheric world, eventually facing down a horrible dragon creature called Ridley, who shares the name of *Alien*'s director, Ridley Scott.

³ "G4tv's top 100 Games," *G4tv.com*, 2012, <http://www.g4tv.com/top-100/> (accessed February 2, 2015) and "IGN's Top 100 Games of All Time," *IGN.com*, 2011, <http://top100.ign.com/2005/index.html> (Accessed February 2, 2015).

In the current literature on game music, *Super Metroid* and other 16-bit games of the Super Nintendo Entertainment System have yet to be fully explored. With this chapter, I hope to fill the gap on 16-bit literature by examining some of the uses of music in games for the SNES. Though the study might also apply to games for the TurboGrafx, Sega Genesis, and various PC games, I will be focusing on the Super Nintendo primarily due to the Super Nintendo's larger and more diverse game library, many of which are generally accepted as some of the best games available during that time period. However, these other consoles and games are still ripe for and deserving of study.

In a documentary on the music in video games, *Diggin' in the Carts*, Hayato Matsuo, composer for 16-bit games such as *Master of Monsters* and *Ogre Battle: March of the Black Queen*, describes his experience transitioning from the 8 to 16-bit: "At first, it started with the NES which had three sounds [channels] and then moved to 16-bit, where memory suddenly increased, which was a big change. When it became seven or eight sounds the world really opened up and there weren't just PSG sounds, but also FM sounds too. Expansions in the tones and the number of ports was inspiring."⁴

Matsuo describes three aspects which affected the composition of 16-bit game music: memory available, the number of separate voices, and the extension of sound capabilities for those voices. For one, composers in the early 1990s had more memory storage available to them, allowing for a larger amount of music. Increase in storage not only changed the amount of music the composer was required to add to a game, but further elevated the status of that music and its composer. Finally, Matsuo talks about the 16-bit composer's changing tool set. As well as increasing the number of instruments available at one time, 16-bit

⁴ *Diggin' in the Carts*, Online Video Series, Red Bull Music Academy <http://daily.redbullmusicacademy.com/enhanced/diggin-in-the-carts> (Accessed February 5, 2015), translation by Red Bull Music Academy.

composers were able to emulate live instruments and even create timbres unique to the system using FM synthesis and increased sampling quality.

Sound for games on the Super Nintendo was powered by two chips: the Sony SPC-700 combined with Digital Signal Processor.⁵ The combination was able to produce eight simultaneous voices, all equipped with ADPCM sampling, and a preset stock of MIDI instruments was included.⁶ Sampling and storage efficiency were vastly improved over past sound chips. With possible effects such as reverberation, echoes, and compression, instrument sounds on the SNES were the most realistic yet heard on a video game console. ADPCM channels also meant that samples could be stored using much less memory than those on contemporary machines such as the Sega Genesis. Effectively, more music was available for less storage cost. Coding and programming for the chip set was also much more user friendly for composers, giving them even more control over how their music sounded and lessening the requirements of coding knowledge. In comparison to previous console chips, the SNES had a more diverse sound library which was easier to compose for and took up less space.⁷

The factors Matsuo identified above allowed composers to create more unified music. They also allowed the many 16-bit games to support and even convey the narrative in ways not possible or intended in previous generations. As story-driven games became more prominent, so, too, did the musical connections between cues. Musical cohesion was used as

⁵ Karen Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design* (Cambridge, MA: MIT Press, 2008), 45.

⁶ Essentially, Sampling, ADPCM and MIDI affect the types of sounds which the SNES was able to produce. Sampling uses small clips of instruments as the basis for digitally produced sound. MIDI is a type of programming language which makes use of sampling. ADPCM allows for a smaller storage space to be used for samples, creating room for more instrument sounds and music.

⁷ Karen Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design* (Cambridge, MA: MIT Press, 2008), 45-48.

a way to connect tracks together, often taking its cue from elements in the game's story. With the creation of bigger worlds, composers were tasked with the musical identification of more characters, areas, and situations. Musical identification contributed to the emotional intentions of the games. Since games were becoming longer, music was used to create continuity in story lines and between different areas in game worlds. Music also was used to create pervasive moods and atmospheres, affecting the emotional impact of a given level or scene in a game. Finally, with timbral capabilities which sounded more like live acoustic instruments, game composers began following certain trends of the film industry, specifically the use of cultural associations through instrumentation. However, the differences between the two mediums meant that composers had to decide how to write for recurring events in separate games. Just as in film, precedents began to set in, creating codes of composition for video games.

Composers of the 16-bit era, specifically those working on the SNES, were not defined by the technology with which they worked. Rather, the new tools available allowed them to realize different types of music and push system capacities to extremes. Many trends which continue to influence game music to this day were reinforced and solidified in this generation, including a push towards realism, a cinematic approach to game music, and video game musical codes. Much of this had to do with the way in which composers chose to utilize the new technology of the Super Nintendo.

Musical Cohesion

The increased length and sophistication of Super Nintendo games required music with cohesion. Musical cohesion, or music that makes logical sense on its own, not only made listening to the music more enjoyable, but created a unified sound world which bolstered the game narrative and mechanics. Musical cohesion creates a unified sound world by connecting a game score through musical features such as instrumentation, key relationships, motivic development, etc. It is similar to genres such as Classical symphonies, which do not usually make large changes of orchestration or style between movements.⁸ In an interview during the 2007 Game Developer's Conference, Koji Kondo stated, "Game music is made up of the many pieces that appear in a game but it's essential to think of all the music as one piece for the entire game, not simply a collection of individual pieces."⁹ Since the progression of a game and its music is always directly tied to the actions of the player, the narrative progression of music became an important quality in music for 16-bit games. Composers were now faced with more choices for timbre, length, and construction on small and large scales. Some chose to utilize the new timbral capabilities to simulate full-scale orchestras and craft symphonic music arching over the entire game. Others turned to contemporary inspirations such as rock or pop, while still others looked back to the "bleeps" and "bloops" of past games.

⁸ The author recognizes that musical cohesion in this manner is not the only way in which pieces can be connected. Symphonies can drop certain instruments and add others. Cohesion can also come from cultural context, audience awareness, and music outside of the European tradition. However, this study will focus on cohesion as represented by traditions of Western classical music. In many cases, the way in which composers do not conform to such practices are as important to the narrative as the opposite. This idea will become important in the exploration of *Earthbound's* music in Chapter 3.

⁹ Cited in Leonard J. Paul, "Droppin' Science: Video Game Audio Breakdown," *Music and Game: Perspectives on a Popular Alliance* (Munich: Springer Fachmedian Wiesbaden, 2013), 72.

Many games were unified through choice of instrumentation. *Super Mario World 2: Yoshi's Island*¹⁰ evokes a Caribbean style, with hints of child-like instruments. Both choices directly tie into the story of the game, which revolves around Yoshi the dinosaur attempting to carry baby Mario across an island to safety. While Yoshi moves through his island, marimba, bass guitars, and electric organs groove to infectious, swung rhythms. As Leonard Paul has noted, the early Mario games often employed a Caribbean style of music. "A welcome return in the above ground music is the sound of a steel drum sounding samples for the lead melodies. With more channels, the rhythm accompaniment was given to the sound of an upright ragtime piano. The combination of the steel drum and ragtime gives an interesting blend of the sound of the Caribbean and the slapstick comedy of early films."¹¹ *Yoshi's Island* uses similar instrumentation to evoke a Caribbean setting, simultaneously creating its own unified sound world as well as connections between past Mario games. The first music heard in *Yoshi's Island* is a simple C-major lullaby which uses the timbral quality of a music box to suggest Mario's child status. The rest of the game continues to employ simplified melodies but with the addition of instruments which evoke a Latin-American sound. Each level title card is introduced with a short drum motive in a fast and complex meter (two measures of common meter, in which the second measure contains an irregular accent on the third eighth-note). Other "primitive" instruments evoke the dinosaur-ridden land in which Mario has found himself, such as an assortment of winds, drums, and percussion, including marimba.

¹⁰ *Super Mario World 2: Yoshi's Island*, Takashi Tezuka, dir. Koji Kondo, composer (Nintendo, 1995).

¹¹ Paul, "Droppin' Science: Video Game Audio Breakdown," 73.

The most interesting evolution of music in *Super Mario World 2: Yoshi's Island* occurs with the various musical themes which sound while the player chooses a level on the map overworld. The game is split into six distinct overworld maps, each accompanied by a similar overworld theme which is taken through subtle variations as the player progresses through the world. The opening world theme is a catchy G-major tune of four measures, with characteristic rhythmic syncopation similar to the opening drum beats (Example 2.1). The next world adds to the Caribbean feel with a single drum line. The following worlds add other distinct flavors to the sound, with instrumentation additions such as strings, guitar, brass, winds, and xylophone.

The musical score for 'Map' in *Super Mario World 2: Yoshi's Island*, measures 1-4, is presented in a multi-staff format. The key signature is G major (one sharp) and the time signature is 4/4. The score includes five parts: Conga Drums (Added World 2), Electric Guitar 1, Electric Guitar 2, Electric Bass, and Strings (Added World 3). The Conga Drums part features a syncopated eighth-note pattern. The Electric Guitars play a melodic line with syncopation, while the Electric Bass provides a simple eighth-note bass line. The Strings part consists of blocky chords. The score is marked with a 'gtr' symbol above the first measure of the Conga Drums part.

Example 2.1 Koji Kondo, "Map," in *Super Mario World 2: Yoshi's Island*, mm. 1-4.¹²

Identification

A unified sound world was not the only way in which composers used the expanded technological capabilities of the Super Nintendo. Composers tied music directly tied into the

¹² Transcriptions by author unless otherwise noted.

narrative of the gameplay, a feat often achieved by the inclusion of thematic motives associated with specific characters or situations. A game which utilizes this type of identification in an archetypal fashion (and which has been covered in current research) is *Final Fantasy VI*.¹³ The history and cultural context of this game is fascinating. *FFVI* is part of a subgenre called Japanese Role Playing Games. Although the subgenre includes a wide range of games, the main characteristics usually include a player-controlled party set in a large story and the incorporation of Fantasy or Science-Fiction elements. The player uses his team to fight monsters or other avatars in return for increased strength, skills, equipment, currency, or other variables improving his party's ability to fight. The *Final Fantasy* series is perhaps one of the most recognizable JRPG video games, with the current number of games in the main series totaling fourteen (with a demo of the fifteenth released at the time of writing).

Many consider the JRPGs of the 16-bit generation to be a golden era of the genre. Audrey Drake states, "SNES RPGs improved upon the bare bones (though still revolutionary) offerings of the NES, and with the new console developers were finally able to realize their visions without having to strip them down to the bare minimum...This generation of RPGs was the first time game creators could fully convey their stories and characters."¹⁴ Although there was an improvement in graphics and a streamlining of the gameplay interface, the story length meant that developers had to sustain interest and

¹³ *Final Fantasy VI*, Yoshinori Kitase and Hiroyuki Ito, dir. Nobuo Uematsu, composer (Squaresoft and Nintendo, 1994).

¹⁴ Audrey Drake, "Why the SNES is the King of RPGs," *IGN*, (August 19, 2011), <http://www.ign.com/articles/2011/08/20/why-the-snes-is-the-king-of-rpgs> (Accessed February 22, 2015).

relatability of characters over tens of hours. The musical themes of each character and world provided information to the player which was not communicated otherwise.

The story of *FFVI* centers on a young woman named Terra who has lost her memory and is conscripted by the evil Kefka to join the Empire's army. Terra eventually meets members of a resistance movement, including the dashing thief Locke and his friend, King Edgar, and they agree to travel together and fight to release the Empire's hold on the world.

Each major character is accompanied by a thematic musical cue, all of which illustrate the personality traits of that individual. As Tim Summers states, "Given the small size of the pixelated avatars, more than any other single element of the game text, it is the music that most distinctly provides the character with an identity."¹⁵ Locke, for example, is a mischievous thief, who is described by the game as a "Treasure hunter and trail-worn traveler, searching the world over for relics of the past." We first meet him as Terra is fleeing from the Empire in the town of Narshe. He enters the house of the old man who had previously been sheltering Terra. In silence, the old man greets Locke saying, "Took you long enough! How goes the robbing and plundering trade?" A look of utter shock crosses the thief's face, accompanied by a sweeping and heroic G-major theme with a snare drum, indicating to the player this is not a thief to be feared.

Terra's theme has even more narrative properties outside of simply identifying her character. After an explanatory cut-scene, the opening of the game sees the entrance of three people in mech suits (giant mechanical exo-skeletons) on a windy mountain. One of the three is Terra. The only sound accompanying the dialogue on the mountain is the rushing wind, and from the conversation we learn that Terra is a sorcerer who is being mind-controlled by

¹⁵ Tim Summers, "From *Parsifal* to the Playstation: Wagner and Video Game Music," in *Music in Video Games: Studying Play* ed. K. J. Donnelly, William Gibbons, and Neil Lerner. Routledge Music and Screen Media Series (New York: Routledge, 2014), 207.

the Empire. As their conversation ends, the wind gradually fades, giving way to the opening chords of Terra's Theme.

The image shows a musical score for 'Terra's Theme' in 4/4 time, key of A-flat minor. It consists of four staves: Alto Recorder, Electric Bass, Strings, and Snareline. The Alto Recorder plays a melancholic melody with a mix of eighth and quarter notes. The Electric Bass and Snareline play a rhythmic pattern of eighth notes, often in triplets. The Strings play a series of dissonant chords, primarily octaves and dyads, creating a gloomy atmosphere.

Example 2.2 Nobuo Uematsu, "Terra's Theme," in *Final Fantasy VI*, mm. 3-6.

Terra's character and the game's tone are set by this theme. Featuring a melancholy A-flat minor, the theme exudes a sense of mystery (Example 2.2). Unlike Locke's theme, the character of this theme gives the player little insight into Terra. The melody is placed in a *dolce* recorder, accompanied by dissonant string chords. These gloomy sounds are juxtaposed against militaristic marching rhythms in a snare drum and bass, perhaps giving some insight into Terra's state of mind. Militaristic drumming suggests the empire's control over her: her tuneful yet sorrowful melody is being forced to march at the empire's tempo. Terra's theme is later woven into the plot of the game in remarkable ways. Summers explains that "The music signifies the role that the character plays in the game's narrative... *Final Fantasy VI* uses character themes in the same way, though because of the limited means of characterization, music makes a proportionally greater contribution to character identities."¹⁶

¹⁶ Summers, "From Parsifal to Playstation," 207-208.

When Terra escapes from the other two, she is rescued by an old man in the village. She awakes with the mind-control device removed and her memory returning. The music surrounding this scene is unidentifiable until Terra's theme returns in a high piano part accompanied by strings. This statement of the theme has several metadiegetic implications. Terra finally remembers her name, but is unable to recall where she came from or why the Empire might be pursuing her. Little time is left for her to recall anything else, as the Empire discovers her whereabouts and Terra must escape out the back door. The piano rendition of the theme also comes back later in the game when Terra is missing from the group, indicating where their thoughts lie.

Identification is not limited to player controlled characters. Areas, enemies, and situations can also be identified by distinct musical cues. The most obvious example in *Final Fantasy VI* is the battle music. As the player navigates her avatars across the world, she encounters random, unseen enemies. When this happens, the current cue is interrupted by a stinger, and the avatars are transported to a separate screen to deal with the enemies (Figure 2.1). The battle music for common enemies is a rhythmically active, minor mode piece with an emphasis on percussion and bass. Sometimes, the characters encounter enemies of greater power or significance to the story. These are identified through different cues of a grander nature. Special music is given to the boss enemies and main enemies. With each cue, the player can instantly identify if the enemy he is fighting is common or not, and this changes the way the player relates to that enemy.



Figure 2.1 Final Fantasy VI. The heroes on the right, face off against menacing enemies in the battle screen. Pictured from top to bottom are Terra, Locke, Edgar, and another companion named Mog.

Summers further elaborates on music’s impact on game narrative:

Game music may make a greater contribution to the player’s understanding and interpretation of the game than the same situation for the average film score, not least because of the technological limitations on the visual component of the game, the aesthetic dominance of the music, and the degree to which gamers have been taught to actively interpret game music in order to seek information and advantage in play.¹⁷

Indeed, player response to a game could hinge wholly on music, an element required to create and maintain an emotional connection to avatars made out of pixels. The “degree to which gamers have been taught to actively interpret game music”¹⁸ functioned on two levels of identification which were enhanced in the 16-bit generation. Specific musical cues could

¹⁷ Summers, “From Parsifal to Playstation,” 208.

¹⁸ Summers, “From Parsifal to Playstation,” 208.

come to be associated with certain in-game characters. Yet, more general musical codes could also be counted on to identify in-game environments, situations, or even the type of game being played.

Atmosphere and Mood

One subject which has so far only been alluded to in this discussion is the direct impact of music on the player, both in reaction to the gameplay mechanics as well as the direct emotional connection a player might have with the game. Since the primary way of communicating information in most video games is through two-dimensional images displayed on a screen, music is utilized as a way of simulating a deeper environment. While the images are confined to the space of a TV screen, music fills the acoustical space around the player. Practically, this means that a player can use sound to identify her avatar in the game diegesis by using what Stockburger describes as acousmatic sound, or sound whose source cannot be seen.¹⁹ When the player hears a sound which is off-screen in one direction, she has the ability to turn the avatar that way in order to locate the source of the sound and fix her spatial position. This ability is especially important in the first-person shooter genre, where the player has a first-person view of the gameworld with a pair of arms extending from the bottom of the screen, essentially placing the player in the game. Since the player has a limited field of view, acousmatic sounds are relied upon to react to situations in the environment.

¹⁹ Axel Stockburger, "The Game Environment from an Auditive Perspective," Thesis, Paper presentation at Level Up: Digital Games Research Conference, Utrecht, NL, 2003.

Music and sound in the 16-bit era were still unable to create three-dimensional acoustic space convincingly, however, composers during this era developed certain techniques to differentiate among environments, and they still had far more flexibility than the sound chip on earlier 8-bit consoles such as the NES. For instance Mario enters a water level in *Super Mario World*,²⁰ music which was previously loud becomes soft and muted, simulating water's actual acoustical effect on sound.

Mood creation, or musical atmosphere, is a key way to draw players into the gaming experience, both emotionally and mechanically. As Gregor Herzfeld states, “The atmospheric attitude [mood or environment creation] is more 'superficial' in a neutral sense of the word. It allows very basic features of music, such as key mode, the use of instruments and instrumental colours, the employment of consonances and dissonances, the association with genres, eras, the general tempo, forms of movement, and codified emotional contents, to dominate the sense of hearing and its affective responses.”²¹ The timbral qualities of the SNES allowed composers even more actively to select the needed mood. The “codified emotional contents”²² and genre association have to do with musical codes, largely stemming from film traditions.

The right mood can help delineate different types of games from one another, as well as spurring the player to action. *Mega Man X*, the spiritual sequel to the popular *Mega Man* series on the NES, uses mood to separate itself from its predecessor, from other games on the

²⁰ *Super Mario World*, Takashi Tezuka, dir. Koji Kondo, composer (Nintendo, 1990).

²¹ Gregor Herzfeld, “Atmospheres at Play: Aesthetical Considerations of Game Music,” in *Music and Media: Perspectives on a Popular Alliance*, Peter Moormann, ed. (Munich: Springer Fachmedian Wiesbaden, 2013), 151.

²² Herzfeld, “Atmospheres at Play,” 151.

system, and to rival games on the Sega Genesis.²³ The soundtrack of *Mega Man X* is dominated by contemporary rock instruments, replete with wailing guitar melodies, heavy drum rhythms, and riff figures. The opening stage, scored in C minor, is set for melodic guitar, accompanying rhythm guitar, drums, and synth strings. The melody is a syncopated, jumping line, reminiscent of a rock guitar solo with virtuosic skips. It is accompanied by static strings and an offbeat riff figure guitar in modal harmony, as well as drums with plenty of interlude fills. With this hard driving sound, the player is spurred to take action. The main character, X, is designed to be a cooler character than the original Megaman. As IGN explains in their review for the virtual console release in 2011, “X was an all-new Mega Man character. Sleeker, faster and edgier than the original blue bot, he introduced long-time Mega Man fans to a grittier, more futuristic version of the cartoony world they'd come to know on the NES.”²⁴ This image was reinforced by the rock music aesthetic.²⁵ *Mega Man X* could have also been Nintendo’s answer to Sega’s heavy reliance on rock in its games. Its main mascot, Sonic the Hedgehog, was accompanied by a rock soundtrack and cool, pop-oriented character design similar to X.

Though 8-bit games such as *Metroid* established a certain amount musical ambience, they were still limited to three melodic channels. Not only were composers of the 16-bit era better able to differentiate among sound environments, they could also create emotional musical backgrounds which were more integrated into the game narrative. Returning to

²³ *Mega Man X*, Tokuro Fujiwar, producer, Setsuo Yamamoto, Toshihiko Horiyama, Yuki Iwai, Yuko Takehara, and Makato Tomozawa, composers (Capcom, 1993).

²⁴ Lucas M. Thomas, “Mega Man X Review,” IGN, April 25, 2011, <http://www.ign.com/articles/2011/04/26/mega-man-x-review> (accessed February 3, 2015).

²⁵ In another slight connection, Megaman’s name in Japan is actually Rockman.

Super Metroid, the first time the player is given free rein to wander the planet Zebes, the accompanying music is static, fitting with the overall tone of the game. The lack of a strong melody and rumbling, chordal sounds give the player no emotional direction, but instead lend to the uncertainty of the situation. The player has only a vague goal of finding the last metroid and defeating Ridley, and the first real melodic payoff does not occur until the first collectable item is found. The fanfare which accompanies the collection of the first item is different from the quiet, dread-filled music which dominated the game to that point. However, the fanfare is short and the previous musical environment quickly returns. It is enough to spur the player into continuing the game, if only to collect more items and break the musical dread which surrounds them.

The intended mood could also depend on the length, genre, and placement in the game. Though both games are platformers,²⁶ it would be inappropriate to assign music from *Super Mario World* to *Super Castlevania IV*. One is a whimsical story of a plumber jumping on turtles and mushrooms, while the other is a much darker tale of a quest to destroy the evil Dracula. If one game's music were exchanged for the other, it would create an anempathetic relationship between music and game.²⁷ Anempathetic music, if used effectively, can create an even deeper musical meaning with the game (as will be seen in the more in-depth study of *Earthbound* in chapter 3); however, for most games it does not make sense. As will be seen in the next section, the ways in which 16-bit composers created musical atmosphere is related, though different, to the musical codes of cinema and past video games.

²⁶ A platformer is a genre of game which focuses on movement through an environment towards an ending area, while avoiding obstacles and enemies.

²⁷ Michel Chion, *Audio-Vision: Sound on Screen*, (New York: Columbia University Press, 1994). Anempathetic music is that which does not seem to match the tone of images on screen. This can create several effects, such as adding humor or ironic horror. Quentin Tarantino films often use this type of music and image relationship.

Musical Codes

Games of different genres use sophisticated musical concepts which in turn rely on a variety of sound idioms. It is worth noting that this aesthetic approach is especially related to compositional techniques in the field of film and popular music which specialize in creating specific moods, atmospheres and characters for virtual worlds that can be connected to the real world via unconscious musical means.²⁸

Clint Eastwood strolls out onto a parched, desert landscape, ready for a gunfight, and a whistle is heard. Rita Hayworth struts across the screen, accompanied by a saxophone. Mario jumps and an ascending octave is heard. Each sound is tied to the image on screen. When we hear a similar whistle in modern film, we know that the image on screen will be in some sort of American Western setting. When a saxophone plays a slinking, buzzy melody, we know a femme fatale has appeared on screen. And if a button press is accompanied by an ascending figure, it would be safe to assume that an on screen avatar has jumped in a video game. But where do these associations come from?

Musical codes in cinema are an established convention and concept for study. Musical codes are semiotic relationships between sounds and culturally accepted ideas. As described by Claudia Gorbman, musical tropes in film fall under three categories: pure, cultural, and cinematic. Pure musical codes refer to music's unique syntax, its ability to communicate in its own language (for example, how combinations of frequencies can suggest harmonic implications in tonal music). Cultural musical codes are the unique understanding of certain musical attributes to signify characteristics, events, time periods, actions, etc. Gorbman clarifies that "We all know what 'Indian music,' battle music, and

²⁸ Peter Moormann, "Preface," *Music and Media: Perspectives on a Popular Alliance*, Peter Moormann, ed. (Munich: Springer Fachmedian Wiesbaden, 2013), 7.

romance music sound like in movies; we know that a standard forties film will choose to introduce its seductress on the screen by means of a sultry saxophone playing a Gershwin-esque melody.”²⁹ These types of codes often depend on the culture in question. A musical marker in one country may have different cultural associations when compared to another country. Last, cinematic musical codes allude not to outside cultural understandings, but to the use of music in film history. The Gershwin-esque melody which Gorbman described above might better fit into this category, as the sultry saxophone is now considered a cliché of the film industry with little outside cultural connotations. Most listeners are able to identify the musical difference between a 1980s Action film versus a 1950s Sci-fi thriller. Where the former might employ heavy rhythms, open tonalities, and rock influences, the latter will use scientific sounding electronics. Many cinematic codes involve the mechanics of film making which are mostly unique to the medium. The montage, for example, uses music to connect a series of images which are otherwise unrelated. Music effectively creates a narrative. These associations affect the way in which we relate to the film. Video games contain similar musical tropes which draw upon a player’s cultural consciousness, while simultaneously creating a new fourth category: video game musical codes.

The idea of video games using cinematic musical tropes is not new in ludomusicological literature. Neil Lerner traces the reliance of early video games on established film music tropes. The opening of *Donkey Kong* for example, makes use of the Dragnet theme, a cinematic musical trope taken from a crime radio drama. The theme,

²⁹ Claudia Gorbman, *Unheard Melodies: Narrative Film Music* (Bloomington: Indiana University Press, 1987), 3.

according to Lerner, is commonly understood to indicate impending trouble.³⁰ Whalen relates musical codes to video games when he discusses the animated cinematic musical trope called mickey-mousing. Just as every action in *Steamboat Willie* is accompanied by a musical cue or sound, so too are the actions of early video games. Even the iconic *Super Mario Bros.* makes use of mickey-mousing, as when Mario jumps, he is accompanied by an ascending figure which mirrors the action.³¹

The three musical tropes of film music can be found in video games. The first, pure musical codes, or the video game music's ability to progress in reference to its own syntax, are a similar discussion to that of musical cohesion. Musical phenomena such as motives, key relationships, and instrumentation connect pieces of music throughout a game. In an entertainment medium which regularly crosses international borders, cultural musical codes are especially important. The music of *Yoshi's Island* distilled elements of the Caribbean into attributes of melody and instrument. Instrumental associations, however, could not be achieved without the advanced sampling quality of the SNES. Another game which makes use of cultural musical codes is *Donkey Kong Country 2*.³² In attempt to win back Donkey Kong, the protagonists Diddy and Dixie Kong must travel through different themed worlds. The first level (which is in a world called "Gangplank Galleon") takes place on a pirate ship. The cue, called "Jibjig," evokes a sailing atmosphere through swinging rhythms and instrumentation of winds and a fiddle. The use of a swinging 3/4 meter and instrumentation

³⁰ Neil Lerner, "Musical Style in Video Games, 1977-1983," in *The Oxford Handbook of Film Music Studies*, David Neumeyer, ed. (Oxford: Oxford University Press, 2014), 340.

³¹ Zach Whalen, "Play Along: An Approach to Video Game Music." *Game Studies* Vol. 4, Issue 1 (November 2004).

³² *Donkey Kong Country 2: Diddy Kong's Quest*, Tim Stamper, dir. David Wise, composer (Nintendo, 1995).

are further reinforced by the sounds of wind and the low beat of drums, as if the ship Diddy and Dixie are on is sailing away with them.

Video games even borrow some cinematic musical tropes. Besides mickey-mousing, the most prevalent use of cinematic musical tropes comes through in cinematic sequences and genre. As developers began to push graphics and memory to their limit, more and more games made use of quasi-cinematic scenes in which the music was set to an exact succession of images. In these scenes, music's function reverts to the function of film music. However, this use also marks an important trend which extends into modern gaming: the use of cinematic cut scenes as a push towards a realistic representation. This is not to say that games before the SNES did not use cut scenes. Rather, developers of the fourth generation further pushed this evolutionary trend and continued to use more cut scenes. This trend is extremely prevalent in story-driven genres such as RPGs.

In order to create atmospheric tone and genre associations, many games on the SNES used timbral cinematic codes. For instance, *Contra III: Alien Wars* uses all the hallmarks of a blockbuster Action and Sci-fi films, such as *Predator*.³³ Both share similar story elements of a tough and buff hero facing down alien invaders with massive guns. *Predator*'s title sequence has only minimal minor harmony and one repeating chromatic motif. Emphasis is placed on rhythm, percussion, and marcato brass hits. *Contra*'s first level also places importance on rhythm and the percussion section, though the game contains more motives. Timbres, especially synthesizers, timpani, and marcato piano, link the movie and game to the same Action Sci-fi genre.

³³ *Contra III: The Alien Wars*, Nobuya Nakazato, dir. Masanor Adachi and Miki Higashino, Tappy Iwase, composers (Konami, 1992).

Just as cinematic musical codes are established by referencing music in the medium's past, so too are video game musical codes. Archetypes in video game music often depend on the genre and series, but many similarities occur in recurring game structures. Opening level music of a platformer genre needs to introduce the player to the overall tone of the game, while avoiding too much tension while the player gets used to the controls. *Kirby's Adventure* on the Nintendo Entertainment System employs a catchy melody with fast and stable harmonic accompaniments, encouraging the player to continue the game.³⁴ Another NES game which uses these opening level tropes is *Adventure Island*. Again, bouncing melodies and major tonalities dominate, putting the player at ease while the game's story and controls are introduced.

As the player progresses through the game, more complicated harmonies, timbres, and musical structures are introduced to ramp up the tension. The tensest music was often reserved for the final stage or boss battle. For the confrontation with Nightmare, the villain in *Kirby's Adventure*, the music is drastically different from the upbeat opening. For the first phase of the battle, virtually no melodic or harmonic elements are present, focusing instead on a fast-paced rhythm using the noise channel. The melodic material that is present is in a low range, creating a composition of rhythm and texture rather than melody or harmony. The next phase continues the emphasis on fast rhythm while reintroducing melody with a winding, chromatic pulse wave line. Harmony also reappears in a minor key and simplified, repetitive progressions. *Adventure Island's* boss music creates tension in a similar way. Only a short loop plays, which consists of two figures. The first is a chromatic stepwise figure played by all the voices. This is followed by an ascending and descending slide and the

³⁴ *Kirby's Adventure*, Masahiro Sakurai, dir. Hirokazu Ando, composer (Nintendo, 1993).

beginning of another chromatic section. In total, the boss battle music for *Adventure Island* numbers only four measures.

Musical tropes such as these continue to be used in games even to this day. The type of music used for opening and final levels depends on the genre and tone of the game. *Mega Man X* features driving rhythms in rock instrumentation, matching the tone of the game. Still, a musical arc exists which serves to introduce the player to the game mechanics and increase tension for important structural points such as boss battles and the confrontation with the villain. *Rayman Origins* is just one example of a modern platformer which adheres to these codes. Its quirky opening level, “Jibberish Jungle,” features cultural musical codes (drums, marimba, digeridoo) to evoke a jungle atmosphere, easing the player into the game with no tense musical figures. Both *Mega Man X* and *Rayman Origins* use cultural codes layered on top of video game musical codes. It is important to note that cultural codes can come not just from a non-Western style as that implied by *Rayman*, but also European and North American pop and Classical traditions.³⁵

First levels and boss battles are just a few examples of musical codes in video games. Some musical codes are much shorter, such as jingles at the end of levels. Other codes are more specific to a genre or even one series of games. The *Mario* series has a huge catalogue of games which contain codes specific to its gameplay. When Mario finds a mushroom, it turns him into a larger version of himself. The transformation is accompanied by a rising motive. In each game, the motive might sound slightly different, yet the code is still easily identifiable. It should be known that video game musical codes, much like cultural and

³⁵ For more discussion of Western music used as codes in video games, see William Gibbons, “Blip, Bloop, Bach? Some Uses of Classical Music on the Nintendo Entertainment System” *Music and the Moving Image*, Vol. 2, No. 1 (Spring 2009), 40-52. Also see William Gibbons, “Wrap your Troubles in Dreams: Popular Music, Narrative, and Dystopia in Bioshock” in *Game Studies* Vol. 11, Issue 3 (December, 2011).

cinematic musical codes, are not used in every game. The way a game reacts to and rejects coded situations in games can be as important as their use. This idea will be discussed in the next chapter.

The following two chapters will take a more in-depth approach to a small group of games. Each game is unique in the way it uses cohesion, identification, mood, and musical codes, yet there are also many similarities.

CHAPTER 3

THE PAN IS MIGHTIER THAN THE SWORD: A COMPARISON OF TWO ROLE PLAYING GAMES

32 Megabits does not sound like a great amount of storage space in comparison to contemporary consoles, but for games on the Super Nintendo Entertainment System, it was huge.¹ Games were expanding to proportions never before seen, allowing developers and composers to create expansive worlds and tell larger stories. This chapter explores two games from the Role Playing Game genre to understand how composers were creating narrative integration in story-driven driven games. *Chrono Trigger* and *Earthbound*, like most RPGs feature expansive stories and far-flung settings in fantastical realms, with gameplay inspired by the numbers, stats, and story elements found in board games such as Dungeons and Dragons. A story in a 16-bit RPG could last as long as twenty to thirty hours, not counting optional quests and side activities.² Composers had to create music which could sustain atmosphere and player interest for long stretches of time, cater to increasingly cinematic approaches towards game development, and utilize new sound technology for game consoles.

Chrono Trigger and *Earthbound* take two different approaches to musical style and narrative integration. Each game has achieved notoriety, thanks in no small part to their soundtracks. The former is a classic take on video game RPG conventions of storytelling and musical codes. The music employs lush string orchestrations, atmospheric harmonies, and sweeping melodies, which all serve to immerse the player in the fantastical story.

¹ For comparison, the base storage capacity of the Playstation 4 and Xbox One is five hundred Gigabytes.

² Currently, it is not uncommon to find RPG and strategy games which can last more than sixty hours, with some even stretching past one hundred.

Earthbound appropriates musical codes and turns them upside down. To match the game's tongue-in-cheek story, the composer used quirky timbres which blend with sound effects instead of traditional orchestration. Where *Chrono Trigger* reaches for an epic quality, *Earthbound* strives for the utterly mundane and amusing. In this chapter, selections from each soundtrack will be examined to explore how the music supports the story. Comparisons will be drawn to illustrate the differences between the musical narratives in order to discover the ways in which composers were fully realizing the musical capabilities of 16-bit machines. In further integrating music with narrative, these composers were foreshadowing future developments of modern game music.

Chrono Trigger

The score for *Chrono Trigger* was written by Yasunori Mitsuda, with help from Nobuo Uematsu.³ Mitsuda was originally hired as a sound designer by game developing company Enix, but quickly felt unsatisfied by his job. “The thing is, even though it said Composer on my business card, I was only doing sound effects and programming.”⁴ Determined to compose, Mitsuda stormed into the head of Squaresoft, Hironobu Sakaguchi, and threatened to quit unless given a different position. Sakaguchi relented and gave Mitsuda a new project the company was working on in tandem with Enix- *Chrono Trigger*. It was one of the biggest games being developed at the time and featured collaboration among some of

³ *Chrono Trigger*, Yoshinori Kitase and Akihiko Matsui, Takashi Tokita, dir. Yasunori Mitsuda and Nobuo Uematsu, composers (Square, 1995). Noriko Matsueda is also credited with one unidentified track. All composers are based in Japan.

⁴ Chris Kohler, *Power-Up: How Japanese Video Games Gave the World an Extra Life* (Indianapolis: BradyGames, 2005), 146.

the greatest contemporary RPG designers and programmers from each company. Mitsuda worked furiously to prove himself and was even hospitalized briefly. Afterward, he was joined by veteran composer of the *Final Fantasy* series, Nobuo Uematsu, to finish up the remaining work.

The story of *Chrono Trigger* follows seven heroes as they attempt to save the world from destruction. The main character, Chrono, is a silent protagonist whose friend, Lucca, invents a teleportation machine.⁵ On his way to see Lucca's invention at the town fair, Chrono meets the disguised princess of the kingdom, Marle. In her demonstration, Lucca inadvertently sends Marle four hundred years in the past (Seen in Figure 3.1). Chrono and Lucca decide to travel back in time to save her. Chrono and Lucca manage to rescue Marle and return to their own time period, but Chrono is accused of kidnapping the princess. To escape, the heroes jump in another time portal which sends them over one thousand years into the future. There they discover a dystopian future in which most of the world's population was destroyed by a giant mythical creature known as Lavos. They embark upon a quest to save the world by searching for the Lavos' creator, hidden somewhere in history. Along the way, four other characters join the group. Robo, a robot, is found in the dystopian future. Ayla is a tribe leader of prehistoric origins. Frog, from the middle ages, is an unfortunate squire turned into a frog by the last party member, Magus, who originates from a heavenly kingdom of legend called Zeal which floats in the sky. Although the party at first suspects him as the source of Lavos, Magus' real aim is to defeat the evil creature.

⁵ Games with non-speaking avatars might seem strange in such a story-driven genre, yet it was a common occurrence. The practice most likely encouraged the player to become more immersed, as if the dialogue of the other characters were being directed at the player, with the avatar acting as a stand-in.



Figure 3.1 *Chrono Trigger*. Crono and Lucca watch as Marle is sucked into the time portal.

Mitsuda wanted his score to match the epic narrative created by the game designers. “I wanted to create music that wouldn’t fit into any established genre... music of an imaginary world. The game’s director, Masato Kato, was my close friend, and so I’d always talk with him about the setting and scene before going into writing.”⁶ The scope of the game was indeed a challenge. Mitsuda needed to create music which enhanced the main characters and represented several different time periods. Adding to this complexity is the relative freedom which the programmers gave the player combined with innovative design techniques. Players can choose to explore areas “out of order,” even though the story cannot

⁶ Kohler, *Power-Up*, 148.

progress without events happening in a certain order. The player can even choose to face Lavos early, ending the game with more story to tell.⁷

The battle system also presented unique challenges and opportunities for Mitsuda. In most contemporary RPGs, enemies are encountered through random battles. These battles happen without warning, with the avatars transported to a separate screen for the battle and returning to their original position once they have defeated the enemies. *Chrono Trigger* removes these conventions by placing enemies on screen. The player has the option to circumnavigate these enemies or engage them. If they choose the latter, the characters will battle on the same screen in which they encountered the enemy. Compared to other contemporary RPGs, this battle system creates a more cohesive diegetic world.

Mitsuda and Uematsu's score serves many of the common narrative purposes. Cues identify different characters or areas, create pervasive atmospheres and moods hold the story together, and adhere to certain cinematic, cultural, and video game musical codes. However, these narrative facets are not always achieved one piece of music at a time. To capitalize on the space available and make up for the expansive and open-ended world, Mitsuda creates cues which serve multiple functions throughout gameplay.

One of the earliest of these types of cues is "Crono's Theme," sometimes called "Crono Trigger" (Example 3.1).⁸ Set in E minor, the music begins with a string line sweeping up several octaves, accompanied by snare, timpani, brass, and strings. The addition of nonharmonic tones and unstable modal movements blurs the opening key. Bi-modality and chromatic mediant are some of the main techniques present in many of Mitsuda's cues,

⁷ Players can choose to face Lavos at different times along the story's progression, resulting in ten different ending scenes. Of course, new players with weak team members are very unlikely to succeed, encouraging most to play through the narrative in its entirety.

⁸ Track listings and timings are taken from *Chrono Trigger: Original Sound Version*

helping morph each piece to fit certain scenarios. After the introduction, the music divides into two sections. The A section is dominated by a saxophone melody supported by harmony which switches between E-major and minor. The B section switches the texture to a more lyrical string melody, dropping percussion and most of the rhythmic accompaniment. The cue is a little over two minutes long, and, if needed, can loop the A and B sections, skipping the introduction.

The image shows a musical score for four instruments: Soprano Sax, Timpani, Strings, and Snareline. The music is in 4/4 time and E major. The Soprano Sax part features a melodic line with eighth and quarter notes. The Timpani part provides a rhythmic accompaniment with eighth notes. The Strings part consists of block chords and dyads. The Snareline part has a steady eighth-note pattern.

Example 3.1 Yasonori Mitsuda and Nobuo Uematsu, “Chrono’s Theme,” in *Chrono Trigger*, mm. 9-12.

“Crono’s Theme” (Example 3.1) is first heard when Crono and Lucca resolve to travel back in time to save Marle. After witnessing Marle’s disappearance, the player regains control and steps onto Lucca's teleportation platform. In this instance, the player is given control over the musical transition. Once the player decides to go after Marle, the previous cue fades and switches to “Crono’s Theme.” The next iteration of the theme comes when the group discovers the destruction of the world at the hands of Lavos. A visual record of the apocalypse is shown, accompanied by the first appearance of “Lavos’ Theme” (Example 3.2), a dread-filled cue characterized by low timbres and dissonant, slow moving harmonies. After seeing the fate of the world, the heroes decide it is up to them to stop the destruction.

Marle says to Crono and Lucca, “There’s only one thing we can do! We must change history! Just like Crono did when he saved me!” As soon as the player agrees with Marle, “Crono’s Theme” takes over with a hard cut. The theme follows the group until they exit the area, even continuing through battles instead of cutting to battle music as would usually happen.

Example 3.2 Yasonori Mitsuda and Nobuo Uematsu, “Lavos’ Theme,” in *Chrono Trigger*, mm. 1-4.

“Crono’s Theme” works on several levels of narrative implication during these two events. When it is first heard, it is associated with Crono’s act of bravery in deciding to save Marle. The expansive melody provides uplift, bolstered by the frequent changes to the major mode. The second time “Crono’s Theme” plays, the situation is much more dire, as the heroes witness a seemingly unstoppable catastrophe. Juxtaposed against “Lavos’ theme,” this act of bravery comes to identify not only Crono, but the rest of the group and even the player, who is given the choice to accept or deny the quest.⁹ After the scene, the player is given control, but the theme continues to play, increasing the scenes’ cohesion and maintaining the mood. Though the player still has to fight enemies, cutting to the battle music would immediately deflate the narrative momentum achieved in the previous scene. The music

⁹ If the player chooses to deny Marle and Lucca’s pleas, the text will double-back until the player chooses to accept. The choice might seem arbitrary without reference to the music, as only the player’s acceptance will bring the hard cut to “Chrono’s theme.” Giving the player control over the music brings a sense of ownership to the quest.

creates a parallel between the two scenes, and since the player is in direct control of the music in both, the theme comes to represent not only the heroes' quest to save the world, but the player's resolve to help them.

After Crono, Lucca, and Marle return from the medieval time period, Crono is arrested by the Chancellor for kidnapping the princess. Following a rigged trial, he is thrown into jail to await execution. With the help of Lucca, Crono manages to escape his cell and defeat the Chancellor. Much of this scene either omits or continues music for the sake of narrative integration through musical cohesion. As Crono wanders the prison in search of an exit, only ambient dripping water accompanies him. Certain sections of the prison also take place outside the building, where the dripping water is replaced with rushing wind. These sounds are only interrupted by the battle music during an enemy encounter. This is just one example of the use of silence or ambient sounds instead music. Often, Mitsuda chooses to leave music out during particularly atmospheric or structurally important parts of the story. Any subsequent entrance of music is given even more power in the narrative, as illustrated by the escape scene.

Upon defeating the Chancellor, Crono and Lucca decide it is time to cut their losses and escape from the castle. The player gains control over the entrance of the cue "A Shot of Crisis." Characterized by unresolved chords and a frantic bass, this cue is used throughout the story to create urgency and build the tension of key moments. "A Shot of Crisis" continues to play even as Lucca and Crono make it to the entrance of the castle. Still under player control, guards cut off all escape routes, and are just about to surround the heroes when a voice yells "Stop!" Marle enters dressed in full princess regalia. Her scream not only stops the guards from attacking, but takes away player control and cuts the music to silence.

Marle is now in complete control of the scene, and that power is only wrested away from her by one who is more powerful than her: the king. Heralded by the “Guardia Castle Theme,” the king demands that Marle stop her inappropriate behavior. Marle resists and ultimately decides to escape with Crono rather than live in the castle. The “Guardia Theme” fades as Marle exits, leaving the king in silence.

Music for the previous scenes functions narratively in different ways. Mitsuda creates musical cohesion by extending music over long periods of time or dropping it altogether. When music is cut off or enters during the prison and escape scenes, it is often situated on structurally important points, such as Marle’s interruption during Crono’s escape. Identifying elements are present in the cues through both visual associations (such as Lavos with his theme) and cinematic musical codes (the king accompanied by the martial music of the castle). Cues also sustain mood and atmosphere by playing through situations where it would otherwise change, such as the continuation of “Crono’s Theme” after the group resolves to defeat Lavos. At other times, music drops out completely. The ambient noise and silence makes the entrance of “A Shot of Crisis” have even more impact.

Purely musical connections between cues are somewhat loose. Musical cohesion between cues (in the form of tonal implications) focuses on the key of G and its related keys. Especially prevalent is the third relationship, either some form of E or B. Just a few examples include “Crono’s Theme” (E minor), “Marle’s Theme” (E-Flat major), and the cue for Crono’s hometown titled “Peaceful Memories” (B-major). The key scheme is not ubiquitous throughout the score, and is most often broken with cues directly related to villains. The theme for both Lavos and his lair are set in F minor. Magus convolutes the structure, as his

key is the same as Crono's, E minor. Originally believed to be an enemy, the key relationship between him and Crono foreshadows Magus' eventual turn to good.

Timbral associations also set up a dichotomy between good and evil in the narrative, especially between the heroes and Lavos. While the former is more likely to stay within a standard orchestral sound world, villains venture into different styles and instruments (the last battle with Lavos goes far away from the heroically associated orchestral sound with synthesizers and drum kit. The instrumentation in combination with sound effects and unstable harmony give the music an otherworldly sound). Themes of each main character share many similarities in a standard orchestral figuration. Most employ strings with a brass or saxophone melody. The themes of Crono, Magus, and Robo all feature a saxophone melody with string accompaniment. Others, such as Frog, use strings in combination with cultural identifiers. Since Frog is from the Medieval era, his music contains a fife melody, with string and snare drum accompaniment and modal harmony, tapping into the cinematic codes associated with his time period. In contrast to Frog, Ayla, from the prehistoric era, is not given any culturally coded instrumentation. Instead, her music mostly features brass.

Video game and cinematic musical codes are used to quickly identify areas of the game quickly. The cue for Crono's hometown, "Peaceful Days," uses the former to evoke the archetypal village feeling found in many previous games. The beginning of most RPGs feature a stable home, safe from the roaming monsters found elsewhere in the game. Music for these areas mirrors the safety of home with strong tonal harmonies, slow tempi, regular rhythms, and, in the case of 16-bit games and beyond, pastoral timbres. For example, "Village Theme" in the 8-bit Nintendo Entertainment System game, *Dragon Warrior*, is a cheerful F-major with a conjunct melody and stable chord progressions. Similarly, the 16-bit

game *Breath of Fire II* for the Super Nintendo and a close contemporary to *Chrono Trigger* features “My Home Sweet Home” as a cue for the protagonist’s hometown. It is a short track for strings, harp, and oboe melody. The harmony is a strong G-major, with slow alberti bass figures, sustained strings, and another conjunct melody. In *Chrono Trigger*, “Peaceful Days” features these archetypes of timbre and style (Example 3.3). Mitsuda even abandons his usual procedures of bimodality or contrasting sections to create a strong B-major key. The melody is in a flute accompanied by sustained strings using stepwise motions. The alberti accompaniment figure also appears in the plucked harp, but without percussion to enhance the lyrical melodic line. Flute, strings, and plucked harp give a pastoral quality. As Claudia Gorbman explains, certain types of orchestration and melodic conventions can conjure images of various settings, including idyllic settings of a village surrounded by nature, like Crono’s hometown.¹⁰

Moderato

The musical score is for the track "Peaceful Days" from Chrono Trigger. It is in G major (one sharp) and 4/4 time. The tempo is marked "Moderato". The score consists of three staves: Flute, Harp, and Strings. The Flute part starts with a dynamic of *mf* and features a conjunct melody with a *8^{va}* marking. The Harp part has a dynamic of *mp* and plays an alberti bass figure. The Strings part has a dynamic of *mp* and provides a sustained harmonic accompaniment.

Example 3.3 Yasonori Mitsuda and Nobuo Uematsu, “Peaceful Days,” in *Chrono Trigger*, mm. 4-7.

¹⁰ Claudia Gorbman, *Unheard Melodies: Narrative Film Music* (Indiana: Indiana University Press, 1987), 82-9.

The battle system music also matches video game musical codes. Most enemy encounters use the rhythmically driven battle music. Video game musical codes for *Chrono Trigger*'s battle track and its predecessors serve to increase tension and create a different musical diegesis. *Dragon Warrior*'s battle music creates tension by chromatically moving up and down along an F-minor scale. Triplet grace notes punctuate each note, and the bass voice outlines chords with faster rhythms. *Chrono Trigger* uses many of the same characteristics to create tension, including a minor tonality, chromaticism and dissonance, and fast rhythms. The last quality is provided by a constant bass guitar figure, outlining D-minor. Dissonance is provided by three voices moving in parallel motion. Often, the notes clash with the constant bass or, at other times, the voices suspend on ninth chords.

Cultural musical codes are also present in *Chrono Trigger*'s soundtrack. The music for the overworld of Ayla's prehistoric time period drops melodic instruments in favor of drums and percussion. Woodblocks, claves, and pitched drums all conjure an image of primitive humans gathered in tents and dressed crudely, mirroring what is shown on the screen.¹¹ Contrasting the primitive-sounding instruments is "Ayla's Theme," which leaves behind cultural musical codes for identification of character. "Frog's Theme" contains cultural musical codes which associate him with his time period and status through a five melody in A-flat minor, accompanied by snare drums, alluding to his military status and medieval origins.

Chrono Trigger pushes the boundaries of narrative integration. Cues identify characters and areas and create pervasive moods which influence the player's perception of the story. Tracks are connected through small threads of timbre and key relationships which

¹¹ Again, it is important to note that these types of codes are applicable only for the intended audience of Japan, as well as parts of Europe and North America. The timbres mentioned are most likely perceived differently outside of these areas.

also indicate a connection with the story. Finally, cultural and video game musical codes are used. What makes *Chrono Trigger's* soundtrack effective is not just fulfilling these narrativistic qualities, but surpassing them. Music such as “Crono's Theme” comes to identify not only with the main character, but the entire group's quest. Multiple moods can come from only one cue, thanks to the music's construction around modes and chromatic mediants. Further, the utilization of each cue from scene to scene points towards the modern trend of seamless, cinematic musical progressions. *Chrono Trigger* uses its music to expand the game narrative. Another SNES Role Playing Game, *Earthbound*, also expands its narrative with music, but does so in drastically different ways.

Earthbound

Besides similarities in genre and mechanics, *Earthbound* is the polar opposite of *Chrono Trigger's* serious tone. It is the sequel to a popular Japanese NES game called *Mother*. However, Nintendo decided to port only the second game to North America.¹² It did not sell well, yet since its release in 1994, *Earthbound* has gained a cult following of devoted fans, defending and ultimately raising the game's status.¹³ It is now considered one of the greatest examples of 16-bit RPGs and certainly one of the most memorable games of all time. Why was the game's acceptance so long in coming?

¹² *Earthbound*, Shigesato Itoi, dir. Keiichi Suzuki and Hirokazu Tanaka, composers (Nintendo, 1994). In Japan, *Earthbound* is titled *Mother 2*.

¹³ Its status improved so much, that the game was rereleased on the virtual console of the Nintendo Wii U in 2014.

Earthbound features an eclectic mix of influences, not only in its music, but also the story and gameplay mechanics. It follows the tale of Ness and three friends (Paula, Jeff, and Poo) on their journey to save the world from the evil Giygas. Amidst other fantasy RPGs like *Chrono Trigger* and *Final Fantasy*, this plot would not be remarkable except that Ness's group is kids traveling around American suburbia (Figure 3.2). As they journey through Eagleland, they visit normal, real-world locations such as hospitals, bars, arcades, police stations, and campsites.¹⁴ Conflict comes in the form of fantasy elements superimposed on the mundane real world, all controlled by Giygas. For example, the town of Twoson is troubled by cult followers, while the town of Threed is infested with zombies.¹⁵ Ness battles many different types of enemies taken from both the fantastical and mundane realms, including runaway dogs, ants, slugs, aliens, robots, piles of puke, cops, new age retro hippies, cranky ladies, and, of course, extra cranky ladies. To combat these enemies, at any time the group can visit the local drugstore to acquire suitable weapons: bats, yo-yos, frying pans, bottle rockets, and popguns. All these story elements are real life seen through the imaginative mind of a child. Bats become mythic weapons and psychic powers become real. Everyday objects and people are the monsters to fight. The music of everyday life becomes the epic soundtrack which accompanies them. Adding to this imaginative world are the many ways in which the developers break the fourth wall, acknowledging that this story is taking place in a video game. *Earthbound* rarely takes itself too seriously, a stark contrast to the high stakes attitude of *Chrono Trigger*.

¹⁴ Eagleland is a thinly veiled reference to the United States.

¹⁵ The four main towns are the main destinations in the game. The locations are cleverly named Onette, Twoson, Threed, and Fourside (One, two, three, four).



Figure 3.2 *Earthbound*. Ness, facing front, stands outside a hotel with his friends, Poo, Jeff, and Paula.

Composers Hirokazu “Hip” Tanaka and Keiichi Suzuki worked together to create the music for *Earthbound*. Next to Koji Kondo, Hip Tanaka was the most influential composer and sound designer in Nintendo’s early days. He was a self-taught musician and studied engineering at university before applying and taking a position at Nintendo. After working on the sound design for some of Nintendo’s earliest arcade hits, Tanaka went on to compose the music for some of the Nintendo Entertainment System’s greatest games, including *Duck Hunt*, *Kid Icarus*, and *Metroid*.¹⁶

Aside from the music for *Mother* and *Mother 2*, Keiichi Suzuki’s accomplishments lie mostly in the realm of popular music and composition. In the 1970s, he was a founding member of two bands. The second, Moonriders, is still active. Additionally, Suzuki has composed in numerous popular musical styles and created the music for several Japanese commercial jingles.¹⁷

The music for *Earthbound* reflects and in many way enhances the juxtaposition of a child’s fantasy and mundane suburbia. The composers employ a broad mix of styles and

¹⁶ Alexander Brandon, “Shooting from the Hip: An Interview with Hip Tanaka,” *Gamasutra* (September 22, 2002).

¹⁷ “Profile,” keiichisuzuki.com, <http://www.keiichisuzuki.com/profile/> (Accessed July 13, 2015).

genres and play on video game musical codes to match the tongue-in-cheek story, all the while using the SNES sound capabilities to their fullest potential. In an interview with Japanese game magazine *Famitsu*, creator and developer Shigesato Itoi said of *Earthbound*'s music, "I've said this several times in the past, but *Mother* and *Mother 2* treat audio information more importantly than most games. Information communicated through sound was important in giving us the power to appeal to emotion more than logic and the power to instantly conjure up certain imagery."¹⁸ In many ways, as Itoi describes, the dichotomy between the real and fantasy worlds would be nonexistent without the music. Elements of the real world come in the form of musical styles taken from pop culture, potentially those which any kid might be exposed to in his or her everyday life. These differing styles almost always rely on musical codes for quick, ironic identifications of game characters and areas. The fantasy musical world creeps into the edges of the game areas outside of the towns where no ambient music would be playing anyway. Electronic soundscapes, atonal textures, and a melding of sound effects and music create an atmospheric world, heightening the mood of any given scene or area. These unsettling soundscapes come to identify the unknown, or the evil caused by Giygas. At the same time, these differing musical genres blend together in strange ways, creating something entirely new.

Cinematic and cultural musical codes in *Earthbound* are thrown in the player's face to the point of ridiculousness. The cue for the hotels in each town, "Enjoy Your Stay" (Example 3.4), is simply elevator music.¹⁹ It features tango rhythms in castanets, a syncopated bass, and a muted electric organ melody. Choosing to stay at the hotel will launch

¹⁸ "The Music for Mother was a Real Monster" artcorekirbies.fr, <http://artcorekirbies.fr/perso/mother/suzutana/#keiichi> (Accessed July 13, 2015).

¹⁹ Names of tracks taken from *Mother 2 Original Soundtrack*

another cue which plays on both cultural and video game musical codes. Upon waking, Ness and the player are greeted by a gentle guitar cue accompanied by birds chirping. Instead of just a short statement (and unlike similar actions in other games) this cue will continue to play until the player has left the hotel.

Allegro

The image displays a musical score for the cue "Enjoy Your Stay" from the game Earthbound. The score is written for three instruments: Castanets, Electric Bass, and Electric Piano. The tempo is marked "Allegro" and the time signature is 4/4. The key signature has two flats (B-flat and E-flat). The score is divided into two systems. The first system shows the beginning of the piece, with the Castanets playing a rhythmic pattern of eighth notes, the Electric Bass providing a steady accompaniment, and the Electric Piano playing a melodic line with a sustained chord in the right hand. The second system continues the piece, with the Castanets playing a similar rhythmic pattern, the Electric Bass continuing its accompaniment, and the Electric Piano playing a melodic line with a sustained chord in the right hand. The score ends with a double bar line.

Example 3.4 Keiichi Suzuki and Hirokazu Tanaka, “Enjoy Your Stay,” in *Earthbound*, mm. 1-8.

Cues even cross over from the use of codes to plain quotation. In another interview with *Famitsu*, Suzuki and Tanaka gave examples of albums from which they drew inspiration for the score of *Earthbound*. Suzuki gathered his ideas for percussion treatment from The Beach Boys album *Smile*. Tanaka cited Prince as one of his inspirations for mixing genres.

Hints of Salsa appear in Fourside. Another location, the Shark Arcade, uses the video game musical past to populate its soundscape. Buzzes, whirs, laser blasts, and even the descending figure from *Space Invaders* fill the space. The arcade, however, has been taken over by the local gang, the Sharks, led by the infamous Franky. Ness must bust up the gang's hold on the arcade by defeating Franky, who is located out back of the arcade. Strangely, when the player confronts Franky, his music is not at all related to the sounds of video games, but instead inspired by 50s Rock'n'Roll. His music starts with a guitar solo, taken almost exactly from Chuck Berry's "Johnny B. Goode," before moving into a simple rock progression of tonic, subdominant, and dominant. This progression is filled out by a simple arpeggio bass line with added sixth and drum set.

Throughout the game, cues which the player will hear most often are those which accompany battles. Unlike *Chrono Trigger*, when Ness and the other party members encounter an enemy on the world map, they are transported to a different screen, where only the enemies are visible to the player. The party is represented by boxes at the bottom of the screen containing names and stat information, giving the player a first-person point of view. This style of battle is taken from older games such as *Dragon Quest*, which originally appeared on the NES. What is not inspired by previous games is the use of music, which simultaneously evokes cultural codes and defies video game musical codes. Battle music in *Chrono Trigger* featured fast-paced bass lines and driving percussion to increase tension. *Earthbound* rejects this code for contemporary genre inspired cues. There are many different cues used to characterize different types of battle. For example, when Ness encounters a machine enemy, the cue "Battle Against a Machine is Played." The music takes inspiration from the enemies by using electronic sounds and sound wave melodies. In contrast, "Battle

Against a Weak Opponent” is an upbeat tune in a major key, comprised of guitar, upright bass, and percussion. “Battle against an Unsettling Opponent” uses bass and bongo drums in what sounds like a warped interlude to a poetry slam. Each of these cues rejects musical codes for video game RPG battles by appropriating and utilizing cultural codes.

When Ness reaches Twoson, he finds a bar called the Dead-End Chaos Theater. This area features a straightforward cultural musical code. An outline of a simple 12-bar blues progression is played in a bass guitar, accompanied by reduced percussion and a lead guitar composed with meandering melodic to sound improvised, further emulating the blues style. Later, the club’s feature band, The Runaway Five, take the stage in a performance clearly inspired by the *Blues Brothers*. The band goes through several small cues of jazz, blues, and rock, with two frontmen dancing with the microphones (Jake and Elwood?). After helping The Runaway Five escape from financial distress, the band is so grateful that they offer to give Ness a lift to Threed. The band shows up for one last concert later in the game.

Interspersed between the tuneful and recognizable styles are cues composed of electronic soundscapes and atonal music. These appear mostly on the outskirts of towns or in relation to the main villain, Gygis, and his cronies. The story begins when Ness wakes during a meteorite strike on the outskirts of his hometown, Onette. Deciding to investigate, Ness travels out into the darkness. The music is really just a collection of sounds which Ness might be hearing in the night. Cricket chirps and police sirens are combined with eery electronic portamentos, all underpinned by two melodic sound waves a tritone apart.

Caves on the edge of towns also feature strange sound effects. These are areas which do not have the possibility for ambient music one might find in a town or hotel. The lack of any real musical textures makes these areas frightening places to visit alone, especially in a

child's fantasy. There are only three sounds in the track "Dangerous Caves." A pulsing sound is predominant, occasionally joined by portamento electronics heard in the beginning of the game, and a disconcerting, atonal melody. The sounds could have been lifted directly from a 50s horror B-movie, as if the empty space is being filled with uncomfortable images taken from the pop-culture unconscious of a child.

The most horrifying use of electronic soundscapes is reserved for the final fight with Giygas. Itoi's confirmation that Giygas was inspired by real events make the soundtrack all the more terrifying. Itoi described his inspiration by saying, "When I was a kid, I accidentally saw the wrong movie at a theater. It was a Shin-Toho movie titled 'The Military Policeman and the Dismembered Beauty.' After I saw it, I went back home and was silent and just really out of it. I had received such a big shock that I worried my parents. After all, a lady had been raped...In other words, there was this sense of terror having atrocity and eroticism side-by-side, and that's what Giygas' lines at the end are. During the end, he says 'it hurts,' right?"²⁰ Though it was perhaps not picked up by children playing *Earthbound* at the time, the relationship with such disturbing imagery completely changes the atmosphere of the game. The tongue-in-cheek attitude is gone, replaced by a real sense of dread. This is an unwinnable fight. It is only through the prayers of all the people Ness has met in his adventures that Giygas is defeated.

Giygas is introduced by a series of dissociated and detuned chords which plane between one another. These figures are punctuated by heavy breathing sounds and electronic sound effects. The first real melodic material is heard at the start of the first phase of the fight with Giygas and his minion Pokey. Pokey is a kid from Ness' hometown, Onette, who chose

²⁰ "Shigesato Itoi, Giygas, and Boobies" earthboundcentral.com (February 17, 2008), <http://earthboundcentral.com/2008/02/shigesato-itoi-giygas-and-boobies/> (Accessed July 14, 2015).

to follow Giygas' evil plans. The cue, "Pokey Means Business," is not made up of strange electronic landscapes or quotations. Instead, it imitates video game music from the previous generation with rudimentary sound waves and noise channel percussion. For a final boss confrontation, this is a peculiar choice. Yet, this is only the first phase of the fight with Giygas, and most of the player's attention is directed towards Pokey, since Giygas is unable to be damaged. The use of sound waves is almost certainly an homage to classic video games, which require an epic and tense musical cue for final bosses. Yet, stripping away the timbre of the SNES highlights that the player is fighting Pokey and not Giygas.

When Pokey is defeated, electronic sounds (similar to those heard in Giygas' introduction, including planning chords and electronic noises) once again dominate the acoustic space. However, the party is still unable to defeat the monster. In a desperate attempt, Paula prays and reaches out to all the people the group has met along their journey. A beautiful, pulsing series of chords based on A-major is heard under the electronic landscape. Paula attempts to pray twice more. Again, the beautiful chords are heard. With the combined prayers of everyone in Eagleland, Giygas is finally destroyed.

The dichotomy between the threads of poppy, fun genres, and atonal electronic music is striking, and creates an odd relationship between story and soundtrack. Cues which ape cultural codes can be jarring enough to break the fourth wall, as if the player is knocked out of Ness' imagined adventure by the real world. The mundane music makes the outside soundscape areas even more frightening, and culminate in the final, terrifying fight with Giygas. In order to fill the narrative space of *Earthbound*, Suzuki and Tanaka freely utilize whatever genre fits, going so far as to reject or appropriate musical codes. The music in

Earthbound is an integral part of the diegesis and the story. Without it, the game would most likely have lost its cult-classic status long ago.

Conclusion

Chrono Trigger's composers opted for stylistic cohesion in the game score. Much of the instrumentation consists of standard orchestral instruments, creating a unified soundscape. If the orchestration does break from the norm, it is most often to identify a battle scene, areas of mystery, or enemies such as Lavos. This form of identification also applies to the heroes, different time periods, and areas. With so many different lands and times to explore, cultural codes are used as shorthand for areas such as the castle or prehistoric era. Cohesion is also created through cinematic techniques which maintains mood. During important points in the story, the composers will often choose to maintain or remove music, rather than hard cut between cues. Finally, *Chrono Trigger* makes use of video game musical codes in a manner which furthers its epic narrative. Towns and safe areas are relaxing pieces, yet still conform to the orchestral soundscape.

While *Chrono Trigger* attempts to place the player in the narrative, *Earthbound* does the opposite with continual reminders that the narrative is, in fact, a video game. When viewed quickly or uncritically, *Earthbound*'s score is a hodgepodge of styles and disconnected areas, with a smattering of strange electronic soundscapes. Yet, the disorganization of sounds is inspired by and has an impact on the game's story. In the real world, a child is constantly exposed to a series of different musical genres. The car radio

might play a soft jazz piece, while the department store echoes with contemporary soft-rock, exactly the places and styles of music Ness hears throughout the games. It is only in silent caves and on the edges of society that the plurality of styles is taken over by a unity of strange sounds and atonal music, places where a child's imagination fills in the musical gaps. With this dichotomy established, *Earthbound* strives to destroy even that distinction with normal towns taken over by fantasy elements.

Hirokazu Tanaka describes his approach towards 16-bit composition in an interview with Red Bull Academy:

I had to compose music to fit the story. I wasn't as limited by hardware. It was about composing and staging music as part of the game's story. *Earthbound* was a game with a contemporary drama. I couldn't create music that I'd never heard before, so there were influences from rock, or pop, or even world music. I littered that throughout the score... Still, with the Super Famicom, the capacity was pretty limited. We were free, but we weren't.²¹

Tanaka does not mention a sudden revolution during the 16-bit era, nor does he say it was the exact same as previous composition. He instead began to shift focus towards the game's narrative, realizing his vision with tools which were unavailable to him before.

The stylistic use of music in both *Chrono Trigger* and *Earthbound* can still be seen in modern game composition. Current composers do everything in their power to keep players engaged in the story, using methods which are not so dissimilar from *Chrono Trigger*. On the other end of the spectrum are games which highlight their status as a game. Rather than immerse the player in hyper-realistic visuals and deafening orchestral sounds, the descendants of games like *Earthbound* continually push the player into awareness that they are indeed playing a game. One of the most common musical ways of achieving this

²¹ Red Bull Music Academy "Hip Tanaka," Online Video, (Tokyo, 2014) <http://www.redbullmusicacademy.com/lectures/hip-tanaka> (Accessed January 3, 2015). Translation by Red Bull Music Academy

awareness is looking back to the stylistic conventions of 8 and 16-bit composition. To further explore narrativistic difference between different eras of gaming, the next chapter will take a closer look at three games across three generations of consoles.

CHAPTER 4

A LINK BETWEEN VIDEO GAME WORLDS

We have all heard and seen the story a thousand times. A country boy must turn hero in order to save the land and rescue the girl. However, this iteration is a little unusual. In order to become the hero, the boy needs you. He needs you, not just to fight by his side along the journey, but to literally move, swing his sword, and fight his enemies. Without you, our hero will be left stranded on the field of battle, helpless before the onslaught. In essence, you are the hero.

This story is not unique in the gaming world. Many developers, from the beginning of the industry, used this simple template. Some were better than others. Perhaps there is no better example of a series using this template than *The Legend of Zelda*, which has become one of the most well-known icons in gaming.

The Legend of Zelda has a strong legacy that extends to the present day. At the time of writing, there are sixteen games on almost every Nintendo console, and a seventeenth game is currently in production for a 2016 release, notable for its promise of a return to the open-ended gameplay and traditions found in the very first title. This chapter will compare the music of three of the earliest games of the series: *The Legend of Zelda* (1986), *The Legend of Zelda: A Link to the Past* (1993), and *The Legend of Zelda: Ocarina of Time* (1998). Each of these games represents one generation of Nintendo's consoles, from the third to the fifth. By placing the 16-bit game (the fourth generation), *A Link to the Past*, in this context, I will demonstrate that the evolution of musical style and narrativity discussed in the previous chapters, as well as some of the differences in approach between these three eras.

The Legend of Zelda

The first game in the series, simply titled *The Legend of Zelda*, was released for the Japanese Famicom in 1986 and came to North American shores the following year.¹ The game stood out for its remarkable take on gameplay, which put the focus on player choice and rewarded exploration, as opposed to the linear jump and run progression found in games like *Super Mario Bros*. Players see the gameworld from above, and the player's goal is to guide his avatar, Link, through eight dungeons in order to rebuild the Triforce of Courage. This magical emblem is needed in order to rescue the princess Zelda and save the land of Hyrule from the evil Ganon. Along the way, Link can attain other items which will increase his abilities and allow him to surpass obstacles. Some of these, now integral features in every Zelda game, include a sword, shield, boomerang, bombs, and a bow.

The soundtracks of the Zelda games were written by composer Koji Kondo. Kondo has achieved a legendary status among fans for his creation of the music for Zelda and Mario, and he has continued crafting the music through the years for some of Nintendo's greatest franchises, including *Punchout!*, *Starfox*, and *Pilotwings*. Born in Nagoya, Japan, in 1961, Kondo began learning piano and electric organ around the age of five.² During high school, he played in bands and cites influences as diverse as rock, jazz, film music, and the sounds of video game. During a Nintendo 1984 recruitment effort at his university, The

¹ *The Legend of Zelda*, Shigeru Miyamoto and Takashi Tezuka, dir. Koji Kondo, composer (Nintendo, 1986).

² Mark MacDonald, "Koji Kondo Interview," *Iup.com*, May 3, 2005, <http://www.iup.com/features/zelda-exposed?pager.offset=5> (Accessed February 3, 2015).

Osaka University of Arts, the company hired Kondo as a composer, and he has been working there ever since.³

After a brief scroll explaining the story, the player and Link are immediately dropped into Hyrule's overworld, a land which connects all the dungeons containing the pieces of the Triforce. No real instructions are given to the player and choices are left open to interpretation. Where are the dungeons and how do you beat them? Should you go up or down? Left or right? Koji Kondo explained his intention for the music's integration in an interview with *Wired Magazine* in 2007. "The first Zelda... With Mario, the music is inspired by the game controls, and its purpose is to heighten the feeling of how the game controls. With Zelda, I was trying to enhance the atmosphere of the environments and locations. The sound of Mario is kind of like popular music, and Zelda is like... a kind of music you've never heard before. So I try to incorporate many different types of music to create an otherworldly feel."⁴

The Nintendo Entertainment System was capable of producing only five simultaneous rudimentary sound waves: two pulse waves, a triangle wave, a noise channel, and limited sampling channel. The first three were used primarily for melodic material, while the noise and sampling channel were reserved for percussion or sound effects. Since the sound effects were produced by the same sound chip, one channel was usually reserved for sound effects.

The music which accompanies the player as he explores the overworld in search of dungeons and hidden items is a martial B-flat major theme (Figure 4.1 and Example 4.1). The melody of the "Overworld Theme" is carried by one pulse wave, while the second is an

³ Chris Greening, "Koji Kondo Profile," vgmonline.net (December 30, 2012), <http://www.vgmonline.net/kojikondo/> (Accessed February 3, 2015).

⁴ Chris Kohler, "VGL: Koji Kondo Interview," *Wired*, March 11, 2007 http://www.wired.com/2007/03/vgl_koji_kondo/ (Accessed April 2, 2015).

imitative countermelody. Both are underpinned by rhythmic triangle bass and noise channels. The noise channel emulates the patterns one might find in a marching band snare drum. Though it is set in a firm B-flat major, the theme has enough harmonic interest to sustain extended listening, an especially important facet since the open-world gameplay leaves the amount of time players will spend with the theme unpredictable. The first full phrase descends through borrowed chord harmony from B-flat to A-flat, G-flat, and F. The mode then switches temporarily to B-flat minor, before a dominant C chord turns the key back towards B-flat major. The second period maintains the same harmonic structure, but with added contrapuntal lines from the second pulse channel and some variation in the bass.



Figure 4.1 *The Legend of Zelda*. Link swings his sword on the Overworld map.

Spirito

Snare Drum (Noise Channel)

Pulse 1

Pulse 2

Triangle

S.Dr.

Example 4.1 Koji Kondo, “Overworld Theme,” in *The Legend of Zelda*, mm 5-12.

The “Dungeon Theme” turns the “Overworld Theme” on its head (Example 4.2). Its melody is now in the bass triangle, supported by G-minor arpeggios in the pulse waves, and the marching noise channel is absent. The switch in atmosphere is striking. While the triumphant B-flat march tune dominates above ground, its stagnant relative minor broods below. The loop of the Dungeon theme is shorter (about twenty seconds, whereas the Overworld loop is about forty) and its repetitive nature quickly becomes grating, spurring the player to move faster and make mistakes. With storage available for only four main musical cues, the overworld and the dungeon themes are the only accompanying music during almost all the gameplay. Compared to the “Overworld,” the austere “Dungeon Theme” gives no pleasure in listening. The tune is not lyrical, and the addition of the minor sixth scale degree

at the end of each arpeggio leaves the piece sounding constantly unresolved. The lack of the percussive noise channel in combination with the relentless motion of the pulse channels evokes a feeling of going nowhere fast. There is motion, but unlike the stable surety of the Overworld, it is a motion without direction.

The image shows a musical score for the 'Dungeon Theme' from *The Legend of Zelda*. It consists of three systems of staves. The first system has three staves labeled 'Pulse', 'Waves', and 'Doubled' on the left, and one staff labeled 'Triangle' below them. The second system has two staves, with the top one continuing the 'Pulse', 'Waves', and 'Doubled' channels and the bottom one continuing the 'Triangle' channel. The third system also has two staves, continuing the same channels. The music is in 4/4 time and features a constant, unresolved motion through arpeggiated patterns.

Example 4.2 Koji Kondo, “Dungeon Theme,” in *The Legend of Zelda*, mm 1-7.

The last two substantial pieces of music in the game accompany the Final Dungeon and the end credits.⁵ The Final Dungeon, Ganon’s castle, is the most harmonically unstable music found in the game. Similar to the normal dungeons, only the three melodic channels are used. However, Kondo stripped even the fleeting tonality of the previous dungeons from this cue. A fitting move, since this final area tests the player’s ability with some of the hardest monsters, puzzles, and the final showdown with Ganon. The top two channels form a

⁵ There is fifth piece of music is the opening title. I have chosen to take this out of consideration because it uses elements of the Overworld theme and it is never heard during actual gameplay.

harmonized melodic unit made up entirely of tritones in upwards parallel motion, with occasional leaps down. These harmonies are further complicated by a bass line which chromatically descends every two measures without regard for the motion of the top two lines. The loop is about twenty seconds in length and does not change, even for the final showdown with Ganon. Only by reaching the princess in the next room can the player stop the music.

When the player collects all the pieces of the triforce, enters the final dungeon, and defeats Ganon, he or she is rewarded with a slightly jarring yet satisfying tune set in C major. The introduction is a disjunct melody composed of only quarter notes on one channel. It transitions into an upbeat duet in thirds between the two top voices, while the triangle follows with an alberti bass figure. This cue is the most surprising addition to the soundtrack, as little previous music prepared the player for this springy conclusion. Some similarities with the other cues occur in the rhythms and the key relationships that could lead modally to C-major (from B-flat and G minor). Yet, there is little else which connects the tracks. A suddenly happy ending was required in order to fulfill video game musical codes. Similar to the battle music of RPGs such as *Chrono Trigger*, Ganon's cue raises the tension of the situation, while the closing scene and credits bring a very strong resolution. The tune has more in common with the aesthetic of a sprightly Mario theme than the atmospheric Zelda dungeons.

The Legend of Zelda soundtrack achieves many narrative implications given the limited capabilities of the system. The music contains a cohesion through key relationships, such as the relative minor switch between the Overworld and the Dungeon. Additionally, the keys of the Dungeon, Overworld, and Ganon's castle (G minor, B-flat major, and an unstable key) lend themselves to a concluding cadence on the final key of C. Musical identification

and mood evocation are limited to only a few areas, yet those few identifications are highly effective. Video game musical codes for the final battle and credits are closely followed. Many of Kondo's musical ideas carry over in the next major console entry of the *Zelda* series.

The Legend of Zelda: A Link to the Past

A Link to the Past came out for the Super Nintendo in 1991 (1992 in North America).⁶ It was actually the third game in the series, following a sequel to the original which appeared on the NES. The story once again follows Link as he adventures to save Hyrule; however, this time he must prevent the plot of an evil wizard named Aghanim, who plans to release Ganon in order to take over the world. Link manages to defeat Aghanim, but even in defeat, the wizard is able to erect a barrier around the castle and send Link to an alternate dimension. To escape, Link must save seven maidens (including the princess Zelda) who can break the barrier, before once again facing Aghanim, and ultimately, Ganon.

The musical soundtrack for *Link to the Past*, again composed by Koji Kondo, accomplishes more integration with the narrative properties described in the previous chapters. For one, Kondo was able to compose more music due to the increase in storage memory of the Super Nintendo Entertainment System. However, Kondo used that space not just to add tracks, but to create cohesive music which suggests and supports elements of the game's story. He achieves ambience and musical atmosphere through instrument choice. Game areas and narrative properties are identified in Kondo's music just as they are

⁶ *The Legend of Zelda: A Link to the Past*, Takahashi Tezuka, dir. Koji Kondo, composer (Nintendo, 1991).

identified by the visuals. And finally, Kondo uses the timbral capability of the SNES to suggest cultural and cinematic codes while rejecting some video game musical codes with his symphonic approach.

The game's opening music sets this adventure apart from the original *Zelda*. Instead of presenting the enjoyable overworld theme, the player is greeted by a cinematic and atmospheric minor opening, "Time of Falling Rain" (Example 4.3). The piece makes full use of the expanded sound channels with a string orchestra. As Link travels out into the rain to save the princess the strings increase the tension (along with accompanying storm sounds) through ascending unresolved ninth chords underpinned by fifth and octave motives in the cello sustaining the key of C minor. The violins soon change to a tremolo motive, adding a frenetic feeling to an already tense situation. When Link reaches the castle, he finds the gate blocked by guards, but some searching reveals a small hole which leads underground. Here, the sounds of the storm abate, yet the tremolo figures continue and do not recede until the player manages to save the princess. This event causes an abrupt change in the mood with the first appearance in the series of Zelda's lullaby. A tuneful G-major theme, this piece will not only have narrative implications in this game, but will influence the soundtracks of later games.

Presto

The musical score is written for Violin, Cello, and Brass in the first system, and Violin (Vln.), Viola (Vc.), and Brass in the second system. The key signature has two flats (B-flat and E-flat), and the time signature is 4/4. The tempo marking is 'Presto'. The Violin part consists of a continuous sixteenth-note tremolo. The Cello and Viola parts play a simple melodic line consisting of a quarter note followed by a dotted quarter note. The Brass parts play chords and rests.

*Example 4.3 Koji Kondo, “Time of Falling Rain,” in *The Legend of Zelda: A Link to the Past*, mm 5-8.*

Kondo uses many of his musical cues to identify different environments.

Accompanying Link across Hyrule is the familiar “Overworld Theme” taken from the first game but with orchestral instrumentation. The melody is now set in a brass instrument, with the countermelody of the first game set in strings. Little is changed from the original besides instrumentation, as well as a few decorative lines and chordal figures to fill out the theme.

Unlike the Overworld, the Dungeons do not take music from the original game, but are instead given their new identifying music. Set again for strings and brass, the composition begins with a single melodic line which echoes and reverberates, as though the sound is bouncing off the walls of the dungeons. The echoing soon turns into the main

accompaniment of the Dungeon, which precedes the entrance of a lonely brass melody, set in a shaky A minor. The counterpoint and harmonic motion will be recycled in later cues.

In the first *Zelda*, the “Overworld Theme” was contrasted by the “Dungeon Theme.” In this game it is juxtaposed against the alternate dimension called the Darkworld, which is the mirror image of Hyrule but with more dangerous monsters in a torn apart landscape. The Darkworld is an entirely different land, with its own dungeons and challenges and theme. Its theme also carries the orchestral aesthetic of the “Overworld Theme” of *A Link to the Past*, yet the Darkworld’s theme functions on another level of game narrative. The melody is more disjunct, and the instrumentation has been up-ended so that the strings hold the melody while the brass serves as an accompaniment. Just as the Darkworld is a mirror image of Hyrule, so too is its music.

The Darkworld Dungeons also feature a theme the reverse of the Dungeons of Hyrule. Each begins with the eighth note figures taken from the opening cue, “Time of Falling Rain.” The interval, however, is changed from parallel Perfect fourths to tritones. This interval is soon joined by a string bass melody inspired by the opening of the Hyrule Dungeons, and Kondo even uses the echoing motif, though this time it is at the end of the loop. The two pieces are also structural mirrors. Where the melody of the first begins only after a lengthy introduction of echoes, the Darkworld dungeon begins with a melody. The endings of the pieces swap, with the echoing taking place at the end of the Darkworld, while Hyrule is dominated by its brass melody and accompaniment figure. Also significant is the swapping of timbres, similar to the Overworld and Darkworld themes. One contains a string melody, while the other is brass.

Kondo uses timbres to employ cultural and cinematic musical codes. One area which makes heavy use of these codes is the Sanctuary. Its music is set for organ and voice, clearly meant to evoke the sounds of a church. The key of the introduction is unstable (a trait stylistically in line with the rest of Kondo's music)⁷, but after four measures, C minor is finally established by a single melodic vocal line. The voice is rhythmically simple (straight eighth notes in common time) and descends in an arpeggio with occasional skips. This voice is soon joined by other voices in a fughatto procedure, once again using the code of the church tradition of Bach. A descending ground bass enters one measure after the initial voice entrance, followed by a countermelody taken from the opening. This last voice then goes on to act as a subordinate line, with elements of the main melody. Another use of cultural codes is the music for Kakariko Village. Set in an easy three meter, the introduction for this cue begins with a soothing and stable bass arpeggio. The harmonic stability, though unusual compared to the other tracks, fits well for the peaceful town. Kondo uses strings, winds, and bell timbres further reinforce to the pastoral quality of the town.

Kondo also utilized the Super Nintendo's timbral possibilities to enhance the otherworldly elements and comic scenes. In these instances, Kondo often veers from the established symphonic soundscape, a trait even more common in future games. One example of this shift is the player's encounter with the fortune teller. During the quest, the player has the option to pay the fortune teller in exchange for hints of future actions. When Link steps into the fortune teller's tent the timbre changes to a guitar moving in arpeggiating parallel thirds. The thirds do not indicate any threat, but do add to the atmosphere of mystery with

⁷ Some other examples of Kondo's key ambiguity include the "Lost Woods" cue, which jumps through different keys until landing on a C Major. The "Light World Dungeons" do not truly begin their melodic material until a bass voice has moved through several echoing figures filled with tritones and semitones. The cue for Boss battles moves through three measures of descending chords. Much of the voice leading in this last cue contains snippets of the half-step motive, described below.

unpredictable harmony. Occasionally, a fast atonal figure in a strange and unidentifiable timbre enters in a high tessitura, adding even more uncomfortable feelings to the mix.

Princess Zelda is connected to otherworldly elements through the timbres in Zelda's lullaby. The instrumentation is mostly for strings, but for the second phrase, Kondo adds a vocal line (connecting Zelda to the Sanctuary cue). A later version of the lullaby appears when Link has gathered all seven maidens. Added to the string melody and accompaniment is a descending figure played by a harp, a timbre which appears when Link stumbles upon the fairy fountains. These magical places are the home of fairies who help Link by restoring health. Each of these cues is timbrally and motivically connected to one another to suggest a relationship to the narrative. Zelda, one of the mystical seven maidens, is connected to this otherworldly power through the vocal timbre of her lullaby. She also has one foot in the world of Hyrule through her string melody, a timbre which does not appear in other magically associated cues.



Figure 4.2 *The Legend of Zelda: A Link to the Past*. Link finds the Master Sword deep in the lost woods.

Kondo creates musical cohesions between pieces in both key relationships and motivic connections. A brief cue occurs when the player obtains the Master Sword (Seen in Figure 4.2). Only four measures long, the theme begins with two measures of a repeating arpeggio in the top voice and ascending string bass chords (Example 4.4). For the final two measures it shifts into planing first inversion major chords, which move up four semitones from A-flat major to B-major. Under this motion is a bass line moving down by semitones, from B-flat to G. From the beginning of the piece, a final cadence on C-major is implied, though the final resolution, from B-major to C, is never reached, it is strongly hinted at through the movement of the top voices. Adding to this feeling is a strong G in the bass, which indicates an augmented G-major chord with an additional major seventh. This G augmented chord is heard due to the strong emphasis on C in the first two measures. More important than the key relationship is the semitonal melodic figure in the last half of the cue. This is not an independent motive, but rather a strong statement of melodic material which unifies the entire score.

Moderato

The musical score is written for three instruments: Bells, Violin, and Cello, in 4/4 time. The tempo is marked **Moderato**. The Bells part (top staff) plays a repeating eighth-note arpeggio in the first two measures, marked *mf*. The Violin part (middle staff) is silent in the first two measures and then plays first inversion major chords in the last two measures, marked *f*. The Cello part (bottom staff) plays a descending bass line in the first two measures, marked *mp*, and then plays a strong G note in the last two measures, marked *f*.

Example 4.4 Koji Kondo, “Master Sword,” in *The Legend of Zelda: A Link to the Past*, mm 1-4.

The semitone motive can be found in many of the musical cues in Hyrule. Most often the half steps traverse a third, and the notes often appear between the notes G and C. The first example, “Time of Falling Rain,” begins with this motive, moving from G to B-flat. The motive is further emphasized by the switch to tremolo figures in the fifth measure. Both dungeon themes contain snippets of the motive. The echoing portion of the Hyrule dungeon theme moves each chord down one half step, from C to B-flat in the emphasized notes. The Darkworld dungeons’ tritone tremollo figures move in semitone figures. In this case, the movement is interrupted by an ascending third. Afterwards, the figures move down once again. Notable, however, is the absence of the note C in the figures or melody.⁸ The Sanctuary’s theme begins with movement between two major chords, implying not only the motive but a strong cadence on C. The ground bass in the fourth measure then takes over a full statement of the motive.

Occurrences of the semitone motive are not limited to the forces of good. The wizard Aghanim’s theme is entirely derived from the motive. The top voice moves by stepping one half step down followed by a jump one whole note up. The string bass also maintains a constant C to G pattern. This half step motion is then augmented, and the bass is now included in the figure. Once again, the motion of the top voice stops at B.

The final sequence of the game is a culmination of the musical relationships Kondo set up throughout the game. The fight with Ganon is set in a frantic C minor. The instrumentation remains a string orchestra, however, the active bottom voice is a bass guitar. The music is also accompanied by the most active percussion heard in the game: a constant snare and off-kilter timpani. After defeating Ganon, the player moves into the next room to

⁸ The note C does appear more often in the second half of the piece, but its strength is polluted by contrapuntal motion down and diminished chords.

see the triforce once again fully assembled. As Link enters the room, he is ushered in by a huge, upward-moving string orchestra, which diminishes to a lone F, finally moving to a full resurgence of the dominant C and string timbres. The triforce then grants Link a wish, and he uses the power to restore Hyrule to its former beauty, displayed in a montage of all the areas the player has seen throughout the adventure. The montage is accompanied by a new melody in C; however, it makes use of the familiar timbres of strings and brass. The piece ends with a view of the Master sword once again laid to rest, and the music grows to a cadence on F-major. The credits begin to roll with the fulfillment of Link's wish. The key switches back to C for a soothing string melody, until the familiar strains of the "Overworld Theme" are heard upon the appearance of Kondo's name in the credits. The theme continues until the end of the credits, with a strong final cadence on C.

Though *The Legend of Zelda* soundtrack was able to accomplish some narrative implications and musical cohesion, Kondo presents a fully interconnected experience with the music of *A Link to the Past*. The music itself is unified through an overall harmonic plan leading to the final key of C. In addition, motives, such as the minor second or borrowed material between dungeons, create even more musical connections, which also function as an implication for the story line through identification and atmosphere. Timbre also plays a huge role, not only in identification of environments or even mood creation, but in key elements of the plot. Princess Zelda is identified as an important otherworldly figure, and the Darkworld, Overworld and Dungeons are at once delineated and connected to their Hyrule counterparts through timbre and structure. Finally, Kondo draws upon easily recognized cultural codes to identify quickly areas of the game. While the next game, *Ocarina of Time*, draws heavily on

these elements, it takes some of the ideas found in *A Link to the Past* while further integrating the music into the story line.

The Legend of Zelda: Ocarina of Time

*The Legend of Zelda is one of those magical series of games that always cause huge amounts of excitement. It sprung onto the NES scene in 1987, and it was a runaway success. Remember the chip shortages that delayed the 1988 release of the Adventure of Link? Or what about the first time you saw pictures of the Japanese version of 1991's A Link to the Past? With the possible exception of Mario, no Nintendo series has caused such a level of hysteria or left behind so many great memories. Ocarina of Time definitely follows in the footsteps of the previous games, and the result is a game that can't be called anything other than flawless.*⁹

*The Legend of Zelda: Ocarina of Time should be recommended playing for ever aspiring videogame designer and programmer out there. If you're making games and you haven't played this game, then you're like a director who has never seen Citizen Kane or a musician who has never heard of Mozart.*¹⁰

As illustrated by these excerpts, *Ocarina of Time* is one of the most highly regarded games of all time, often topping lists for best video games ever.¹¹ Its metacritic score, (essentially a compilation of many different reviews) is nearly perfect, with a score of ninety-nine out of one hundred.¹² *Ocarina*'s music is a major aspect of the game's universal praise.

⁹ Jeff Gertsmann, "Legend of Zelda: Ocarina of Time, The Review," *Gamespot*, <http://www.gamespot.com/reviews/legend-of-zelda-ocarina-of-time-the-review/1900-2543677/> (Accessed April 2, 2015).

¹⁰ Peer Schneider, "The Biggest Game of the Decade," *IGN*, <http://www.ign.com/articles/1998/11/26/the-legend-of-zelda-ocarina-of-time-review> (Accessed April 2, 2015).

¹¹ *The Legend of Zelda: Ocarina of Time*, Eiji Auonuma, Shigeru Miyamoto, and Yoichi Yamada, dir. Koji Kondo, composer (Nintendo, 1998). See "G4TV's Top 100 Games," *G4TV*, <http://www.g4tv.com/top-100/> (Accessed April 2, 2015) and "IGN's Top 100 Games of All Time," *IGN*, <http://top100.ign.com/2005/index.html> (Accessed April 2, 2015).

¹² "The Legend of Zelda: Ocarina of Time," *Metacritic*, <http://www.metacritic.com/game/nintendo-64/the-legend-of-zelda-ocarina-of-time> (Accessed April 5, 2015).

In his review for IGN, Peer Schneider also sets aside some time to talk about the music of *Ocarina*. He praises Kondo's new compositions, comparing some of the Dungeon music to that of Philip Glass, while simultaneously lamenting the absence of the standard Overworld theme from *Link to the Past*. But, it is not just the music which catches Schneider's ear:

But what really makes this game are the sound effects. Every location has a multitude of ambient noises, from the clanking of a windmill, the subtle trickling of water to the howling of the wind. The sound effects are brilliant... The sound virtually engulfs the player, drawing you completely into the world of Hyrule. A world that players will be so content to live in while the game lasts that we can't put it any other way -- *Zelda* succeeds on every level.¹³

Schneider's adulation of the sound effects and soundtrack is similarly parroted in ludomusicological literature, and for good reasons. Karen Collins uses *Ocarina* as an example to demonstrate the functions and types of game music.¹⁴ Zach Whalen situates the game as an example of stylistic tendencies and the uses of music in middle generation games.¹⁵ Why so much attention and praise? The biggest difference between *Ocarina* and *A Link to the Past* is scope. The game's jump from 2D to a 3D environment which, as Schneider describes, envelops the player in sound, presents plenty of new challenges for Kondo. The increase in technological capacity allowed by the Nintendo 64 gave composers much more freedom compared to the SNES, so they could create pleasing sonic experience. However, all is not new and original in *Ocarina of Time*. Many musical ideas used in *Ocarina* are preceded by *A Link to the Past*. Some are adapted and many new cues were

¹³ Peer Schneider, "The Biggest Game of the Decade," *IGN* <http://www.ign.com/articles/1998/11/26/the-legend-of-zelda-ocarina-of-time-review> (Accessed April 2, 2015).

¹⁴ Karen Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design* (Cambridge, MA: MIT Press, 2008), 127-133.

¹⁵ Zach Whalen, "Play Along: An Approach to Video Game Music." *Game Studies* Vol. 4, Issue 1 (November 2004).

created, but Kondo was able to take both old and new elements and create an integrated series of musical environments which elevates the game's narrative.

The story, just like the music, is broader in *Ocarina of Time* than in previous *Zelda* games. Once again, Link must travel Hyrule to save the land from the evil Ganon (renamed Ganondorf in this game). Ganondorf is an adviser to the king and takes the form of a regular (albeit evil looking) man. Though Link is willing to take on Ganondorf, there is one problem: he is only ten years old. Therefore, Link must gain access to the Temple of Time, which will allow him to time travel seven years into the future. Though he succeeds in traveling seven years in the future, in this timeline, Link discovers that Ganondorf has already won and turned Hyrule into a desolate place. To defeat Ganon, Link must gain a new power by saving the seven sages, located around various places in Hyrule.

Ocarina of Time has a big world, and that world required a large amount of music to characterize and identify vastly different places. Similar to the procedure in *A Link to the Past*, some cues are reused and newly orchestrated to fit within the game's narrative. Other newly created material stands alone in the game, yet plays off similar cultural and video game musical codes. Still others are linked motivically and timbrally to the musical diegesis within *Ocarina*, such as those which are linked to the pitch material of the ocarina.

Several cues make a return from *A Link to the Past*. A few are even left relatively unchanged, such as the "Master Sword" and "Ganon's Theme." Leaving both cues with their original orchestration creates a direct connection with the previous game. We know, through the music, that the sword is the same one which a different hero (also named Link) used to defeat Ganon. Yet, the similarity in music for Ganondorf identifies him as the same evil which plagued Hyrule before. One cue which was given new character through orchestration

is “Kakariko Village.” In the previous game, strings, winds, and bells were used in combination with a triple meter and major harmony to evoke a pastoral quality through cultural codes. *Ocarina* goes even further, switching the instrumentation to plucked guitar, pipe, and harmonica.

Ocarina’s use of timbre takes much inspiration from *A Link to the Past*, while at the same time forging new instrumental uses with an eclectic orchestration which identifies with the plot of the story. The otherworldly timbres of the sanctuary and seven maidens remain mostly intact, imported in this game for use in relation to the seven sages. First, the sanctuary of the previous game is replaced in *Ocarina* with the Temple of Time, a holy place in Hyrule which Link uses to travel between the two different times. The music makes cultural connections with medieval Christian music by employing just one chant voice for the area. This has the effect of making the Temple feel older than the sanctuary of *Link to the Past*. The chant melody is set in D Dorian and contains many of the modal cadences and melodic figures of a medieval plainchant. Its pitch material is also directly affected by playable notes on the ocarina, as most of the melody is accessible to the player.

Upon saving each sage, Link is taken to the Chamber of the Sages, which is accompanied by music timbrally connected to the Temple. Instead of one voice, up to three are present at one time. No definite key is identified, but the notes of C, B-flat and D are emphasized. Underlying the interplay of voices is a constant octave figure arpeggiating downwards. The first notes go from C down to B-flat, E, C, D, and E, played by a harp, which takes over for the chime instruments of *A Link to the Past*. The harp timbre is also heard during other scenes of the game, including Navi the Fairy’s flying music and the fairy fountains. Both are connected to the magical status of the sages, and thus are connected

timbrally. Rounding out the link is the presence of the voices, which draws a comparison to the Temple of Time, and *Zelda's* theme which contains many of the same timbres.

Ocarina of Time places music directly in the narrative of the game, making it the most musically integrated game of the three. In order to time travel and gain access to certain areas, Link must also collect and learn songs on his ocarina (Seen in Figure 4.3). As Zach Whalen explains, "The player-character Link's most important item is his ocarina, which a gamer must learn to play with the controller. In 'ocarina mode', a player presses keys that correspond to notes on the potato-shaped wind instrument....Successfully playing a melody fragment unlocks an animation which completes the melody and performs the specified action when appropriate. Not only do these musical themes flavour the experience of play, they are also reproduced in the backgrounds of several of the game's environments."¹⁶ The player is not restricted to playing notes in a certain order, but is free to take out the ocarina and improvise.

¹⁶ Whalen, "Play Along: An Approach to Video Game Music."



Figure 4.3 *The Legend of Zelda: Ocarina of Time*. Link begins playing a song on his ocarina.

One function of the ocarina is to transport the player to an area he or she has already visited. As Whalen states, the music which the player uses to transport Link is directly tied to the area to which he or she wishes to go. For example, Link can transport himself to the Temple of Time by playing the first six notes of its theme, A, D, F, A, D, and F.¹⁷ Playing these notes triggers an animation, turning the interactive music noninteractive. Transporting to the area also changes the music from diegetic to nondiegetic, as the background chant takes over (Example 4.5). More than just identification, the ocarina is the center of musical cohesion in *Ocarina* in both key relationships and orchestration.¹⁸

¹⁷ The player is not required to play the notes with correct rhythms, accents, etc., so long as the keys are pressed in the correct order. The following cutscene begins with the ‘correct’ statement of the theme, finally transporting Link to his destination.

¹⁸ This integration of in-game instruments with the rest of the score is not limited to *Ocarina of Time*. Elizabeth Medina-Gray offers a wonderful analysis of the interaction of in-game instrument and underscore in two later titles in the series, *The Legend of Zelda: The Windwaker* and *The Legend of Zelda: Skyward Sword*. Elizabeth Medina-Gray, “Meaningful Modular Combinations: Simultaneous Harp and Environmental Music in Two *Legend of Zelda* games,” in *Music in Video Games: Studying Play* ed. K. J. Donnelly, William Gibbons, and Neil Lerner. Routledge Music and Screen Media Series (New York: Routledge, 2014), 104-121.

Seven years later, the player is able to return to the ranch, which is now under new management. The owner speaks of a horse that he has never been able to tame. Sure enough, that horse is Epona. Playing “Epona’s Song” calms her down, and Link is now able to take Epona with him on his journey.

Taking its cue from *Link to the Past*, much of the instrumentation in *Ocarina* uses orchestral instrumentation, with a strong emphasis on strings. True to its name, however, the ocarina also plays a prominent role in many narrative-related cues. When the game is first turned on, the player is greeted by the “Title Music.” Scored for piano, strings, and the ocarina, it foreshadows the orchestrational narrative properties for the rest of the game. An even more significant use of the ocarina occurs in the first statement of “Zelda’s Lullaby” (Example 4.6).

The image shows a musical score for "Zelda's Lullaby" in 3/4 time, marked "Moderato". The score is arranged in three staves: Ocarina (top), Harp (middle), and Strings (bottom). The Ocarina part is in treble clef with a key signature of one sharp (F#) and features a melodic line with a long slur over the first six measures. The Harp part is in bass clef with a key signature of one sharp (F#) and consists of a rhythmic accompaniment of eighth notes with a dynamic marking of *mf*. The Strings part is in treble clef with a key signature of one sharp (F#) and consists of a rhythmic accompaniment of dotted half notes with a dynamic marking of *p*.

Example 4.6 Koji Kondo, “Zelda’s Lullaby,” in *The Legend of Zelda: Ocarina of Time*, mm 5-12.

This cue is given special significance throughout the game. When it is first heard, Link is just meeting Princess Zelda in the past timeline. During this time period, Zelda is also a child. When Link steps into the courtyard where Zelda is standing, the lullaby begins to play, scored for ocarina, strings, and harp. It was established in the previous game that the

harp is always associated with the otherworldly and the forces of good, a feature true in *Ocarina* as well. The strings connect Zelda to the sonic world of Hyrule. Though the princess is connected to the mystic aspects of magic in Hyrule, the strings also identify her as part of the physical realm. Finally, the ocarina connects Zelda directly to Link. Since Link is the hero of time, the only one who is able to use the power of the ocarina to travel through time, the addition of the instrument into the lullaby suggests that Zelda also has some role to play. And of course, Zelda makes several appearances throughout the game, attempting to aid Link in his quest, even showing up to help Link during the final confrontation with Ganondorf.

After meeting Zelda, Link is taught to play the lullaby on his ocarina. Of all the songs Link and the player learn throughout the adventure, this is the most important. Some areas are only accessible by playing the lullaby. At other times, characters will not even talk to Link unless they hear the cue. The lullaby cue can even inform the player about events during the narrative.

When Link jumps into the future, he meets a mysterious warrior named Sheik. The music which accompanies him gives clues of his true identity, the disguised princess Zelda. Comparing the themes of Zelda and Sheik reveals many similarities. First, the keys are relative to one another: G major for the lullaby and B-flat major for Sheik.²⁰ The melody of Sheik's theme is closely related to Zelda's Lullaby through some subtle motivic connections. Contrapuntal movement of the lullaby is hinted at in several spots through Sheik's theme, most notably the opening ascending third and descending fourth. This motive is especially prominent in the last three measures of Sheik's loop (as if Kondo is hammering us on the head with the motive to make sure we get it). The instrument choice also links Sheik to

²⁰ By now, B-flat has been established as an important key in Hyrule. Most often, it is the key associated with the Hyrule overworld, as we have seen in the previous two games. Though the player shouldn't be expected to know this, the choice of B-flat is probably not an accident.

Zelda. Most of the music is carried by a harp, closely associated with the otherworldly, highlighting the mysterious yet positive nature of the warrior.

Areas in *Ocarina* are much more musically diverse than those found in *A Link to the Past*. Stepping out of the Overworld can lead Link and the player to widely diversified musical areas, such as tribal drums and winds, dark and unsettling chorus music, or light and fun. However, many overarching ideas are utilized from its predecessor. Timbral similarities create relationships between cues and their characters. Cultural codes are used to quickly identify areas in the game.

Conclusion

Though each of these entries from the *Zelda* series used music in different ways, they show a logical progression of Koji Kondo's style. *The Legend of Zelda*, with limited sound capabilities, was still able to provide a score which matched the narrative of the gameplay. Cues are atmospherically juxtaposed, yet still fit well together musically. Most of what Kondo achieved in *The Legend of Zelda* was through key relationships, yet the score's quality should not be forgotten.

The Legend of Zelda: A Link to the Past benefitted from a wider diversity of tools available to Kondo and the evolutionary nature of 16-bit era music. However, amongst the many choices he faced, Kondo creates a tightly cohesive musical score which perfectly identifies with the story. Just as in the first game, *A Link to the Past*'s cues are musically linked through key. Where Kondo improves musical cohesion is the recurring motives and

timbres. Some timbres also identify with different narrative elements in the game, such as the harp and voices with elements of the otherworldly.

Kondo takes further steps of narrative integration in *Ocarina of Time* by basing much of the score on pitches which the player is able to control through the ocarina. One area in which *Ocarina* surpasses the others is mood evocation. Each environment is represented by a multitude of instruments, making the world feel more diverse than ever before, and cultural codes are often relied upon for quick characterizations of areas and people. However, many ideas and even cues are taken from *A Link to the Past*. *Zelda*'s rich history as a game franchise began with these early games. As *Gamespot* writer Jeff Gertsmann said, "no Nintendo series has caused such a level of hysteria or left behind so many great memories."²¹ No small part of that hysteria is thanks to the music of Koji Kondo.

²¹ Jeff Gertsmann, "Legend of Zelda: Ocarina of Time, The Review," *Gamespot*, <http://www.gamespot.com/reviews/legend-of-zelda-ocarina-of-time-the-review/1900-2543677/> (Accessed April 2, 2015).

EPILOGUE

CONTINUE?

This study began with the aim of examining the narrative role of music in the 16-bit era of games. Through a series of examples, it was illustrated that music's role in a game story included a musically cohesive score through key, motives, and timbre, identification of characters and areas, the creation of a pervasive mood, and musical codes. With new tools and sounds available to composers for the Super Nintendo, many chose to unify the game's score through instrumentation. In some cases, such as Koji Kondo's *A Link to the Past*, instrumentation not only unified the soundworld of the game, but identified different narrative aspects.

Mood evocation in console games became even more powerful in the 16-bit era with the introduction of new instrument sounds and tighter overall musical control. Large games such as *Chrono Trigger* often relied upon musical cues to inform the player about the environment or situation in she has entered. *Chrono Trigger* controls its moods in cinematic ways while still allowing the player to control the game. Other games, such as *Earthbound*, use the mood of music to knock the player out of immersion. Moving from a cheesy hotel lobby to a horrific fight with Giygas accompanied by electronic soundscapes is jarring, but makes the encounter more potent.

Many of *Earthbound*'s cues include musical codes, which use recognizable instrumentation for quick identification and associations with common cultural, cinematic, or video game concepts. Many games, like *Chrono Trigger*, utilize cinematic musical codes to communicate mood and game mechanics. Codes can also be used to suggest elements of a

story. The harp in *A Link to the Past* is associated with the otherworldly not only with onscreen identification, but with also the cultural associations of the timbre itself.

Much more is left to be done regarding 16-bit game music. Other companies and consoles were left out of this study, but their interaction, especially between Nintendo and Sega, had many ramifications on game development which seeped into music. The so-called Bit Wars began as a battle between these two companies, each pitting their own 16-bit machine against one another. Sega attempted to draw older audiences away from Nintendo by advertising their games with realistic images and rock soundtracks. This was the first time in years that Nintendo's market share was threatened, and they responded with a plethora of games in all types of genres which catered to a much larger audience. The battleground was further shaken by the introduction of a new contender, Sony, which upped the ante with an even more powerful 32-bit machine. The fight for technological dominance and audience attention between three console companies continues well into modern gaming.

PC gaming during the 16-bit era is also well worth closer study. Computers began to outstrip consoles in terms of raw power, and some of the most influential PC games were released in the early 90s. Games such as *Doom*, *The Secret of Monkey Island*, and *Diablo* all perfected their respective genres, and their influence can still be felt upon modern gaming.

Modern Mobile gaming traces some of its most important milestones back to the 16-bit era, especially the introduction of Nintendo's Gameboy. The concept of taking a game which could rival those seen on home consoles was revolutionary. Though the system was technologically limited, its low price-point and high mobility made it one of the most popular gaming machines of the time. Music for Gameboy games was limited to just four simultaneous sounds. Composers for these games had to once again become innovative,

especially in comparison with the capabilities of contemporary consoles and computers. The introduction of smartphones and tablets changed the landscape of mobile gaming, yet Nintendo is still the only real competitor in the dedicated mobile console market.

The video game medium is currently undergoing many changes, but music is as important as it ever has been. Millions of people buy and play video games every year, and all hear the labor of the musicians working with game developers. As new ways of playing and hearing are created, it is important to look back and rediscover some of the ways in which music has and continues to influence video games.

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