

## ***Final Fantasy VII Remake***

### *Music Redesign for Evolved Expectations Across Console Generations*

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**ABSTRACT** Video games are a constantly evolving medium, and, consequently, the expectations of players are ever increasing. Players are continuously exposed to games with increased graphical and audio fidelity, making them more familiar with technology. This in turn allows players to develop more critical opinions of video games, and, subsequently, game music. One such criticism is that over repetition of audio leads to annoyance and reduced immersion for players. This phenomenon originates in psychology research, where Daniel Berlyne defines listener fatigue as the relationship between diminishing appreciation and enjoyment of audio stimuli as exposure increases. While the repetition of musical assets in older games may lead to listener fatigue, I propose that this problem has become more apparent in recent years due to the evolving expectations of players. As a result, contemporary games combat this issue by using more dynamic approaches to music design to reduce repetition, increase in-game musical responsiveness to events, and provide a musical experience closer to what the player expects. Players' increased expectations become more evident in the advent of an increasing number of remakes of older games, especially where the new musical experience is vastly different from the original. In this paper, I propose that differences in music design between two versions of the same game (i.e., an original and a remake) across multiple console generations can offer a unique perspective for viewing phenomena such as listener fatigue. In this article, I compare the music design of *Final Fantasy VII* (Square, 1997) and *Final Fantasy VII Remake* (Square Enix, 2020) to (1) explore how players' expectations have evolved between titles, (2) outline how game developers historically have understood and managed musical repetition, and (3) offer insights for composers on how to better adapt older, existing soundtracks for modern expectations. **KEYWORDS** music design, role-playing games, Final Fantasy, remakes, procedural music

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## **INTRODUCTION**

Historically, game audio has often been considered an afterthought during development, with limited resources designated to the storage of audio assets and the streaming/processing of audio in real time.<sup>1</sup> With these limited resources, an amount of repetition was generally *expected and accepted by players*, especially in early games. As time passed and these technologies became more familiar, player expectations evolved and generally

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1. Aaron Marks, *The Complete Guide to Game Audio*, 2nd ed. (Burlington, MA: Focal, 2009), 3; Martin Wilde, *Audio Programming for Interactive Games* (Burlington, MA: Focal Press, 2014), 1; Cale Plut and Philippe Pasquier, "Generative Music in Video Games: State of the Art, Challenges, and Prospects," *Entertainment Computing* 33 (2020), 11; Kyle Worrall and Tom Collins, "Considerations and Concerns of Professional Game Composers Regarding Artificially Intelligent Music Technology," *IEEE Transactions on Games* (2023), 2.

became more critical of the video games that they played, and the audio that they heard. While the repetition of music can sometimes be seen positively for evoking feelings of nostalgia in players or establishing themes, repetition of audio assets is an aspect of game development that receives criticism for its negative effect on immersion. This is a well-documented problem, supporting this change in player expectations in recent decades.<sup>2</sup> Audio, however, is not the only aspect of modern games that receives backlash for overuse of assets. Players expect high fidelity audio *and visuals*, and repetition of visual assets has been shown to be similarly critiqued.<sup>3</sup> This aligns with early psychology research by Berlyne, which defines listener fatigue as desensitization to and lack of enjoyment stemming from over exposure to audio.<sup>4</sup> Furthermore, procedural content generation receives similar complaints for its use in *The Elder Scrolls: Daggerfall* (Bethesda, 1996), *Mass Effect* (BioWare, 2007), and *Bloodborne* (FromSoftware, 2015). These games use procedural content generation to generate non-story content, and extend playtime artificially, without requiring bespoke level design by developers. Unfortunately, this use of procedural content generation leads to bland, visually repetitive levels, due to the overuse of a small selection of assets, aptly compared to “oatmeal.”<sup>5</sup>

Games as a medium continue to evolve, and new methods are employed to reduce repetition of sound and music. These approaches include, but are not limited to the following: the use of MIDI data files instead of audio files for adaptive music; the rearrangement of existing audio files for more variation with a reduced data footprint; the employment of Nyquist’s Theorem to reduce sample rates of audio files, increasing the number of files it is possible to include; the generation of new musical content in real time; and the procedural synthesis of sounds with minimal or no input data for infinite variations.<sup>6</sup> These methods alleviate the problem of repetition-based fatigue, but further

2. Jean-Frederic Vachon, “Avoiding Tedium - Fighting Repetition in Game Audio” (presentation, 35<sup>th</sup> International Conference on Audio for Games, London UK, Feb 11–13, 2009); Martin O’Donnell, “Producing Audio for Halo,” Gamasutra, May 20, 2002, accessed November 20, 2023, <https://www.gamedeveloper.com/audio/producing-audio-for-halo/>; David Forss, “Reducing Repetition in Game Sound: Utilizing Frequency Manipulation to Create Variations of Footstep Sound Assets” (Undergraduate diss., Luleå University of Technology, 2016), 5; Plut and Pasquier, “Generative Music in Video Games,” 13; Wilde, *Audio Programming for Interactive Games*, 14; Worrall and Collins, “Considerations and Concerns of Professional Video Game Composers Regarding Artificially Intelligent Music Technology,” 1.

3. Stefan Greuter and Adam Nash, “Game Asset Repetition” (presentation, ACM Conference on Interactive Entertainment, New York, December 2–3, 2014).

4. D. E. Berlyne, *Aesthetics and Psychobiology* (New York, Appleton-Century-Crofts, 1971).

5. Kate Compton. “So you want to build a generator . . .” Tumblr, 2016, accessed October 12, 2023, <https://www.tumblr.com/galaxykateo/139774965871/so-you-want-to-build-a-generator>.

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), 11; Sam Hughes, “Hades Special with Audio Director Darren Korb,” The Sound Architect, Feb 2, 2021, Podcast, 49:37; Paul Weir, “The Sound of *No Man’s Sky*” (presentation, Game Developer Conference, San Francisco, Feb 27– Mar 3, 2017); Vachon, Avoiding Tedium, 1–11; Phillip Lamperski and Bobby Tahouri, “Real-Time Procedural Percussion Scoring in *Tomb Raider’s* Stealth Combat” (presentation, Game Developer Conference, San Francisco, Mar 14–18, 2016); Anthony Precht, “Adaptive Music Generation for Computer Games” (PhD diss., The Open University, 2016), <http://oro.open.ac.uk/45340/>; Simon Cutajar, “Automatic Generation of Dynamic Musical Transitions in Computer Games” (PhD diss., The Open University, 2020), <http://oro.open.ac.uk/69192/>; Andy Farnell, *Designing Sound* (Cambridge, MA: MIT Press, 2009); Feng Su and Chris Joslin, “Procedural Sound Generation for Soft Bodies in Video Games” [presentation, ACM SIGGRAPH Conference on Motion, Interaction and Games (MIG ’19): Motion, Interaction and Games,

highlight how much more critical audience are becoming, as the sub-par fidelity of some of these methods are critiqued for not meeting users' expectations.<sup>7</sup>

While some of these techniques do not lead to high enough fidelity output, dynamic music design approaches within the industry have been standardized, receiving widespread use across most contemporary games. These music design approaches are typically defined as **parallel**, where different stems are mixed in real time to better match changes in the game; **transitional**, where different music tracks are transitioned between to better match situations, for example battle to exploration; and **ornamental**, where musical stingers (or fragments) play over the top of a soundscape/background piece.<sup>8</sup> The **algorithmic (or procedural)** form is a less common fourth approach. This approach typically constitutes the timing, playback, and generation of note-level music events.<sup>9</sup> By combining the parallel, transitional, and ornamental approaches to music design, music teams and composers can alleviate repetition-based listener fatigue to an extent. Unfortunately, there is a limit to what can be achieved with pre-composed assets in combination with these approaches, so fatigue is still a problem in specific situations. Battle music in Japanese Role-Playing Games (JRPGs) is one such case. The grinding nature of JRPG gameplay and the limited range of musical pieces to accompany battle scenarios leads to higher-than-average exposure to these tracks, which can in turn lead to listener fatigue.<sup>10</sup> Furthermore, while modern JRPGs leverage parallel and transitional techniques to increase musical variety, games in the genre require long playtimes to complete. This means that players have increased exposure to repeating music, even outside of battle music.<sup>11</sup>

Another aspect of the video game industry that speaks to the evolution of player expectations is that there has been a sharp rise in the number of ports, remakes, remasters, and reboots in recent years. While there is some overlap between these terms, for the sake of this article, I define them as the following:

- Ports are the bringing of an existing product to a new platform, often with quality-of-life updates (for example, the porting of the original *Final Fantasy VII* was released on PlayStation (1997) and ported to PC on multiple times; the 2013 port included features such as a toggle to reduce random encounters).

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Newcastle upon Tyne, October 28–30, 2019]; Adrian Barahona-Rios and Sandra Pauletto, "Synthesising Knocking Sound Effects Using Conditional WaveGAN," (presentation, 17<sup>th</sup> Sound and Music Computer Conference, Torino, June 24–26, 2020).

7. Bötter, Niels, "Current problems and future possibilities of procedural audio in computer games," *Journal of Gaming & Virtual Worlds* 5, no. 3 (2013), 215–234.

8. Richard Stevens and Dave Raybould, *Game Audio Implementation: A Practical Guide Using the Unreal Engine* (Waltham, MA: Focal Press, 2015), 227–229. The terms parallel and transitional are also interchangeable with the terms horizontal resequencing and vertical layering that appear in Winnifred Phillips, *Composers Guide to Game Music* (Cambridge, MA: MIT Press, 2014), 188–202.

9. Stevens and Raybould, *Game Audio Implementation*, 227–229.

10. Stephen Armstrong, "Sounding the Grind: Musicospacial Stasis in JRPG Battle Themes," *Journal of Sound and Music in Games* 2, no. 2 (2021): 1–21.

11. William Gibbons and Steven Reale, "Prologue: The Journey Begins," in *Music in the Role-Playing Game: Heroes and Harmonies*, eds. William Gibbons and Steven Reale (New York: Routledge, 2020), 1–6.

- Reboots are the restarting of a franchise from a new title, usually with a new story [for example, the reboot of the *Tomb Raider* (Core Design, 1996) franchise with *Tomb Raider* (Crystal Dynamics, 2013), which is the start of a new trilogy].
- Remasters are the updating of the quality of an existing product by creating a new master version of a file through alteration or enhancement [for example, *Final Fantasy VIII Remastered* (Square Enix, 2019), which includes HD character and enemy models, and increased screen resolution compared to the original].<sup>12</sup>
- Remakes are when an original game is made new, in a different form (for example, *Final Fantasy VII Remake* (Square Enix, 2020), which is built in a completely different engine, for new platforms, as a vastly different experience to the original title, while only covering a portion of the original plot).<sup>13</sup>

Each of these four categories of games have become increasingly popular in recent years and attempt to capitalize on existing IP. However, each of them remains loyal to the source material, and brings the original experience closer to the expectations of a modern audience to varying degrees. For clarity, the two are explained separately, but plotted as two axes of a graph in Figure 1.

First, there is the degree to which each is loyal to the source material. The 2013 reboot of *Tomb Raider*, for example, introduces a new story that provides an origin for Lara Croft. In doing so, it is not particularly loyal to the original material. A port, by comparison, generally remains truer to the original material than a reboot, as they are generally more focused more on mechanical quality-of-life changes. Similarly, a remaster as an upgrade to textures, resolutions, and models remains equally loyal to the original material as a port. Remakes, however, often including new story elements, remain less true to the original material than a remaster or port.

Second, there is the degree to which the original material is brought up to meet the expectations of a modern audience. Returning to the 2013 reboot of *Tomb Raider*, by using a modern game engine with better graphics and voice acting, this reboot aims to bring the source material closer to the expectations of the modern audience. A port, by comparison, using the original models and graphics, but featuring some quality-of-life changes, does less to bring itself up to the expectations of modern audiences. Remasters, on the other hand, often upscale their models and textures and improve resolutions, and sometimes include quality-of-life changes, and even new versions of soundtracks, so they do slightly more than ports to bring themselves up to the expectations of modern audiences, but less so than reboots, which are built from the ground up. Finally, remakes do more to bring themselves up to meet the expectations of modern audiences, compared with remasters and ports, and are closer in line to a reboot in this respect.<sup>14</sup>

12. "Definition of REMASTER," Merriam-Webster, accessed November 15, 2023, <https://www.merriam-webster.com/dictionary/remaster>.

13. "Definition of REMAKE," Merriam-Webster, accessed November 15, 2023, <https://www.merriam-webster.com/dictionary/remake>.

14. There are some games that sit outside of these definitions, as exceptions to the categories provided, such as the *Final Fantasy Pixel Remasters* (Square Enix, 2021).

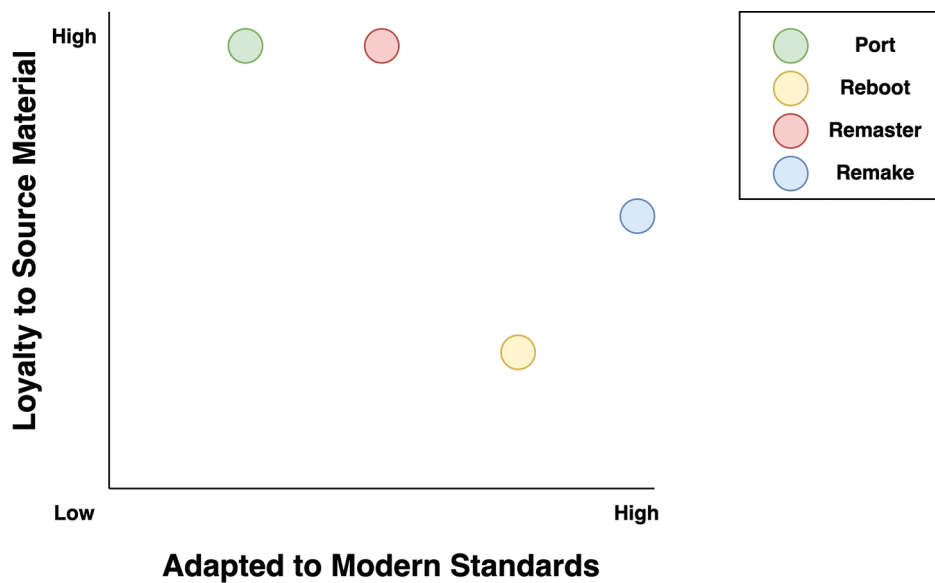


FIGURE 1. A graph demonstrating where ports, reboots, remasters and remakes sit with regards to loyalty to source material, and the degree to which they adapt source material to meet modern expectations.

In this article, I suggest that the trend of companies remaking older games offers a unique framing device in which to contextualize the evolution of player expectations through the lens of problems such as listener fatigue, as well as the music design choices that are made by developers. In this article, I choose to compare *Final Fantasy VII*, and its long-awaited counterpart, *Final Fantasy VII Remake*, analyzing the opening mission of each game, the official soundtracks, and how battle music design has evolved, and investigate the following research questions:

- RQ1: What do the differences in music design between both games tell us about how players' musical expectations have changed?
- RQ2: What do the differences in music design between both games tell us about how the perception of listener fatigue has changed over time?
- RQ3: What can we learn from the differences in music design that could better inform future composers who are adapting older soundtracks for modern audiences?

The remaining sections of this paper are structured as follows. First, I provide a literature review of listener fatigue in game audio and procedural music in games. Second, I contextualize the music design of *Final Fantasy VII* and *Final Fantasy VII Remake* by examining their game engines. Third, I perform a direct comparison between the official Original Soundtracks (OSTs) to discuss each game's music at a macro level. Fourth, I perform a comparison between how battle music has been handled in both titles. Fifth, I perform a direct comparison of the opening mission of each game. Sixth, I conclude by

discussing the implications of findings for industry practitioners and highlight the potential for procedural music techniques and the role they could play in the future of game music and alleviating listener fatigue.

## BACKGROUND

Despite the historic lack of resources for audio in games, music and sound play a significant role in supporting narrative intra-diegetically, providing ludic information to players, and directly affecting player dexterity and immersion.<sup>15</sup> However, as laid out in the article's introduction, this lack of resources induces a necessity for repetition of assets during prolonged gameplay sessions, in turn leading to listener fatigue.<sup>16</sup> A range of integration approaches have been developed to lessen this fatigue. For example, standard practice for sound design in games relies on a combination of techniques such as rearrangement, randomization, and real-time processing to add variation to audio files.<sup>17</sup> Similarly for music, more dynamic approaches to music design have been proposed. These approaches are defined by Richard Stevens and Dave Raybould as the transitional, parallel, algorithmic, and ornamental forms.<sup>18</sup> Two of these approaches are widely adopted across the industry, with some particularly technical composers implementing pseudo-procedural systems that build on these approaches to great effect. I define these systems as pseudo-procedural, as although their designs hint at interactive state-driven designs to their music systems, the authors do not define them as procedural.<sup>19</sup> For example, in *Starship Troopers: Terran Command* (The Aristocrats, 2021) a rules-based

15. Marks, *Complete Guide to Game Audio*, 3; Wilde, *Audio Programming for Interactive Games*, 1; Plut and Pasquier, "Generative Music in Video Games," 11; Worrall and Collins, "Considerations and Concerns of Professional Video Game Composers Regarding Artificially Intelligent Music Technology," 2; Phillips, *Composers Guide to Game Music*, 98–103; Rebecca Roberts, "Fear of the Unknown: Music and Sound Design in Psychological Horror Games," in *Music in Video Games: Studying Play*, edited by K.J. Donnelly, William Gibbons and Neil Lerner (New York: Routledge, 2014), 138–150; Chance Thomas, *Composing Music for Games: The Art, Technology and Business of Video Game Scoring* (Florida: CRC Press, 2016), 20–21; Richard Stevens and Dave Raybould, "Designing a Game for Music: Integrated Design Approaches for Ludic Music and Interactivity," in *The Oxford Handbook of Interactive Audio*, eds. Kasey Collins, Bill Kapralos, and Holly Tessler (Oxford: Oxford University Press, 2014), 147–166; Mark Grimshaw, Sui-Lan Tan, and Scott Lipscomb, "Playing with Sound: The Role of Music and Sound Effects in Gaming," in *The Psychology of Music in Multimedia*, eds. Siu-Lan Tan, Annabel Cohen, Scott Lipscomb, and Roger Kendall (Oxford: Oxford University Press, 2013), 289–314; Hrinday Shah and Mugdha Oberoi, "Effects of video game music on hand dexterity performance in young adults," *International Journal of Current Research and Review* 13, no. 2. (2021): 39–42; Collins, *Game Sound*, 133; Timothy Sanders and Paul Cairns, "Time perception, immersion and music in video games" (presentation, International Conference on Human-Computer Interaction, Scotland: Dundee, September 2010), 160–167; Mark Grimshaw, Craig Lindley, and Lennart Nacke, "Sound and Immersion in the First-Person Shooter: Mixed Measurement of the Player's Sonic Experience," (presentation, *Audio Mostly* 2008, Piteå, Sweden, October 2008).

16. D. E. Berlyne, *Aesthetics and Psychobiology* (New York, Appleton-Century-Crofts, 1971); Gibbons and Reale, "Prologue: The Journey Begins," 1; Vachon, "Avoiding tedium," 1; O'Donnell, "Producing Audio for Halo"; Forss, "Reducing Repetition in Game Sound," 5.

17. Farnell, *Designing Sound*, 14; Marks, *Complete Guide to Game Audio*, 6.

18. Stevens and Raybould, *Game Audio Implementation*, 227–229.

19. It can be argued that all music systems in interactive media can be considered procedural to some degree, due to the nature of the games engine in controlling musical playback (see Stevens and Raybould, *Game Audio Implementation*, 227; Paul Weir, Allesandro Coronas, Timea Farkas, and Kyle Worrall, "IGGI Seminars—Procedural Audio in Narrative Game Design," October 2021, remote, 1:27:40, <https://www.youtube.com/watch?v=>

system controls the use of parallel and transitional approaches with shorter segments of music to ensure faster musical responses to gameplay changes.<sup>20</sup> The music design of *Dying Light 2* (Techland, 2022) is another example of a pseudo-procedural system. This music system centers around the use of priority-based, situation-dependent ranking that transitions between multiple smaller parallel sub-systems. The larger, overarching system moves seamlessly between sub-systems, such as narrative music for the main quest, and situational music with varying intensity for combat, exploration, windmill climbing, etc.<sup>21</sup> For the most part, however, the pace of innovation in music and sound design has slowed in recent years, settling into a set of accepted conventions. The use of more complex procedural/algorithmic approaches are becoming more commonplace, albeit slowly.<sup>22</sup>

To discuss the potential effects of procedural music approaches on fatigue, it is first important to define the meaning of “procedural” in relation to music. The term procedural is used across a variety of game development disciplines, and the understanding of the term in industry is not fully standardized among audio teams, which often leads to confusion.<sup>23</sup> Procedural content generation, for example, can be understood as the application of computational methods such as rules-based, stochastic, or machine learning approaches to generate in-game content. This term is most often applied to the generation of visual or mechanical content.<sup>24</sup> Procedural sound design most often refers to sounds that are fully synthesized in real time, without the use of or reliance on samples. By comparison, early procedural music research classifies systems as either generative or transformative, drawing distinction based on whether the algorithms generate new data or rearrange existing data to create something new.<sup>25</sup> This definition is later expanded by Cale Plut and Phillipe Pasquier, who classify procedural “performance” systems, which “address the interpretation” of music within the game.<sup>26</sup> However, they struggle to demonstrate many examples in modern games, supporting how practical innovation has slowed.

The use of procedural music algorithms to generate game music dates back as far as 1984 with *Ballblazer* (LucasFilm Games, 1984), which uses Peter Langston’s “riffology” algorithm to generate endless melodies over the top of a static background to match the

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AllYuKKxks&t=7s). In this article, however, I use the term *procedural* as defined in Plut & Pasquier, “State of the Art in Generative Music,” 1.

20. Kejero, “Better Adaptive Music for Starship Troopers,” (presentation, Audio Developer Conference, London, November 13–15, 2022).

21. Oliviere Deriviere, “Dying Light 2 – Behind the Music,” December 15, 2022, <https://dyinglightgame.com/news/dying-light-2-stay-human-behind-the-music/>.

22. Plut and Pasquier, “State of the Art in Generative Music,” 6; Worrall and Collins, “Considerations and Concerns of Professional Composers Regarding Artificially Intelligent Music Technology,” 2.

23. Worrall and Collins, “Considerations and Concerns of Professional Composers Regarding Artificially Intelligent Music Technology,” 7.

24. Worrall and Collins, “Considerations and Concerns of Professional Composers Regarding Artificially Intelligent Music Technology,” 4.

25. Rene Wooller, Andrew Brown, Eduardo Miranda, Rodney Berry, Joachim Diedrich, “A Framework for the Comparison of Processes in Algorithmic Music Systems” (presentation, Generative Arts Practice: Creativity and Cognition, Sydney, December 5–7, 2005), 1; Karen Collins, “An Introduction to Procedural Music in Video Games,” *Contemporary Music Review*, 28, no. 1 (2009): 8.

26. Plut and Pasquier, “State of the Art in Generative Music,” 4–5.

endless game design.<sup>27</sup> This technique is unsatisfactory due to low levels of musicality in the generative melodies, and while this specific technique was not used again commercially, there are more successful examples of procedural music in modern games. Successful examples include but are not limited to the following: rules-based approaches such as *Rez* (Q Entertainment, 2001) or *Ballblazer*; stochastic or pseudo-random algorithms such as *Hades* (SuperGiant Games, 2020) and *No Man's Sky* (Hello Games, 2016); and artificial intelligence/machine learning algorithms such as *Rise of the Tomb Raider* (Crystal Dynamics, 2016) and *Marvel's Avengers* (Crystal Dynamics, 2020).<sup>28</sup> In these examples, music is generated from nothing, or existing music files are rearranged in real time to offer more musical variety during extended play sessions. This endless generation or rearrangement of musical content lessens the likelihood of listener fatigue in players by providing a constant stream of new musical experience, at least in theory. However, the adoption of procedural music systems is limited, with the most popular form being transformational systems, which do not require a game's composer to adapt their workflow.<sup>29</sup> While research investigating the lack of adoption of procedural music is nascent, it is clear there are a variety of factors affecting adoption.<sup>30</sup>

#### CONTEXTUALIZING THE MUSIC DESIGN OF *FINAL FANTASY VII*

Contextualizing the music design of *Final Fantasy VII* encompasses understanding how and why the developers chose to store the music as MIDI, and a basic understanding of the game's proprietary engine. These factors are important to consider, as the developer's decisions affect the process of music implementation within the game. This ultimately influences how the composer writes and designs the music. Music design for the PlayStation mostly centers on the use of hard cuts and quick fades between songs that fit specific situations or environments. This approach is exemplified in games such as *Resident Evil* (Capcom, 1996) and *Spyro the Dragon* (Insomniac Games, 1998).<sup>31</sup> Notably, Karen Collins states that *Final Fantasy VII* is an exception to the use of recorded audio, relying on MIDI and the onboard synth chip to increase the number of tracks that could be included, so that music did not need to "loop endlessly."<sup>32</sup> *Final Fantasy VII's* music

27. This stochastic algorithm endlessly generates a melody line by choosing between thirty-two eight-note melodies, and by making decisions regarding playback speed, volume, and the omitting or eliding of notes. This makes it one of the first examples of both a transformative and performance algorithm in games. Peter Langston, "(201) 644-2332 or Eddie & Eddie on the Wire An Experiment in Music Generation," Langston, 1986, accessed October 1, 2023, <https://www.langston.com/Papers/2332.pdf>.

28. Precht, "Adaptive Music Generation for Computer Games"; Cutajar, "Automatic Generation of Dynamic Musical Transitions in Computer Games"; Plut and Pasquier, "State of the Art in Generative Music in Games," 10; Lamperski and Tahouri, "Real-Time Procedural Percussion Scoring in 'Tomb Raider's' Stealth Combat."

29. Worrall and Collins, "Considerations and Concerns of Professional Composers Regarding Artificially Intelligent Music Technology," 2.

30. Weir, "Sound of No Man's Sky"; Lamperski & Tahouri, "Real-time Procedural Percussion in Tomb Raider's Stealth Combat"; Plut and Pasquier, "State of the Art in Generative Music in Games"; Worrall and Collins, "Considerations and Concerns of Professional Composers Regarding Artificially Intelligent Music Technology," 4-7.

31. Collins, *Game Sound*, 69.

32. Collins, *Game Sound*, 69.



utilizes a transitional music design approach, where the increased number of tracks plays a role in minimizing prolonged exposure to tracks over the course of thirty to eighty hours of gameplay.<sup>33</sup> However, this approach offers limited real-time interactivity when compared with the procedural or parallel approaches, as transitions need to happen at musically suitable moments. To contextualize this music design choice, the game engine must be understood. Details regarding *Final Fantasy VII*'s engine are hard to come by due to a lack of official translated materials. However, Joshua Walker has released an extensive document including details of how the game's internal engine works.<sup>34</sup> Walker describes the proprietary game engine as being split into six modules that are responsible for different aspects of the game.<sup>35</sup> The kernel is the overarching module responsible for

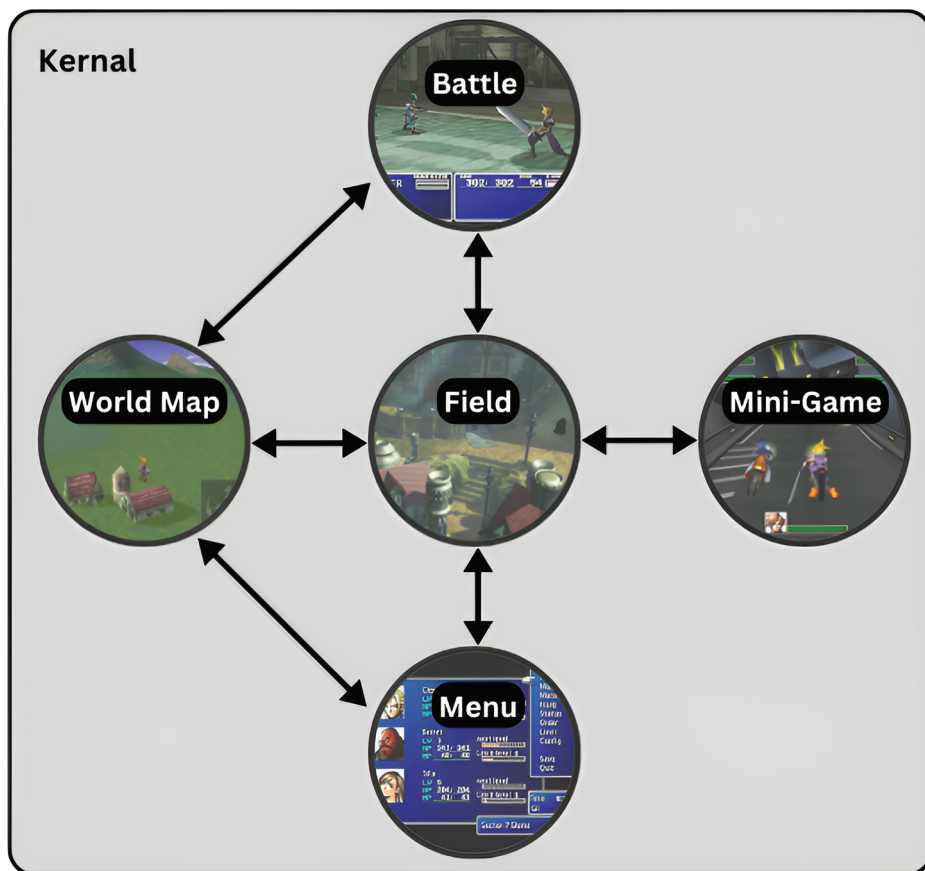


FIGURE 2. *Final Fantasy VII*'s engine modules, and arrows demonstrating possible game state transitions.

33. Refer to Table 1 for details.

34. Joshua Walker is a global moderator for the Qhimm team forums and a figure head of the Qhimm team, an old-school hacking community that specialises in modding SquareSoft games and PlayStation software à la the modding community that rose around *Doom* (Id Software, 1993).

35. Joshua Walker, "Gears: A Look Inside The Final Fantasy Vii Game Engine," OSnews, February 4, 2013, accessed June 20, 2021, <https://q-gears.sourceforge.net/gears.pdf>.

managing the entire system, and the five remaining modules correspond to various aspects of the game. These five modules are world map, battle, field, menu, and mini game. The kernel allows the game to transition between these five modules. Figure 2 is adapted from a diagram in Walker's document.<sup>36</sup> With a game engine that focuses on transitioning between sub-systems for various aspects of gameplay, the use of a solely transitional approach to music design is justified.

## CONTEXTUALIZING THE MUSIC DESIGN OF *FINAL FANTASY VII REMAKE*

Details about *Final Fantasy VII Remake* are more readily available, and official interviews with the developers explain that *Final Fantasy VII Remake* is made in Unreal Engine. Additionally, Japanese audio middleware solution Criware is used for the implementation of adaptive audio.<sup>37</sup> In opposition to its counterpart, the remake's engine allows the game to be set in a semi-open world with non-instanced real-time action combat. The game's design allows for the use of a combination of the parallel, transitional, and ornamental approaches to "seamlessly transition in response to in-game conditions."<sup>38</sup> For example, the same melody line for a location piece can be used in different situations by dynamically shifting as the player explores or enters combat, responding to in-game parameters while retaining elements of the location theme.<sup>39</sup> These practices are commonplace in contemporary games and lessen the repetition of audio assets, while allowing music to respond in a closer approximation of real time. With this context in mind, I now compare three distinct aspects of the music design for these games, including a macro-level overview of the official soundtracks (OSTs), a more specific consideration of the battle music design, and a final case study on the opening mission of each game.

## A COMPARISON OF OSTs

The *Final Fantasy VII* OST contains roughly four and a half hours of music. Of these tracks, some are used throughout the entire game such as "Let the Battles Begin," "Fanfare," and "Shinra Inc.," while others are used in sections of the campaign and as a result are heard less frequently. *Final Fantasy VII Remake* covers approximately one-third of the original games' story. From the original's soundtrack, there are twenty-three tracks totaling seventy-one minutes of music that correspond to the sections of *Final Fantasy VII*, which are covered in *Final Fantasy VII Remake*. By comparison, *Final*

36. Walker, "Gears: A Look Inside The Final Fantasy Vii Game Engine," 9.

37. Daiki Kamiyama, "How CRI Middleware's HCA Codec Aids the Development of Final Fantasy and Other Square Enix Titles," Automaton Media, Translated by Brendan Noyes, June 9, 2022, accessed Oct, 1, 2023, <https://automaton-media.com/en/interviews/20220609-13173>; Oscar Taylor-Kent, "Final Fantasy VII Remake: Fantasy Finally Becomes Reality," *PlayStation Official Magazine - UK*, April 2020, 11.

38. Kamiyama, "How Cri Middleware's Hca Codec Aids the Development of Final Fantasy and Other Square Enix Titles," 2022.

39. Oscar Taylor-Kent, "Final Fantasy VII Remake: Fantasy Finally Becomes Reality," 11.; Oscar Taylor-Kent, "Exclusive Collector's Guide to Final Fantasy VII Remake," *PlayStation Official Magazine - UK*, April 2020, 11.

*Final Fantasy VII Remake* has 157 tracks equating to approximately 515 minutes, covering the main plot points from the game, new additional content, and roughly one hour of music that is accessed only via in-game jukeboxes. This is longer than other contemporary JRPG titles, such as: *Persona 5 Royal* (P-Studio, 2020); *Tales of Arise* (Bandai Namco Studios, 2021); and *Yakuza: Like a Dragon* (Ryu Ga Gotoku Studio, 2020), which featured soundtracks of 5:32:58, 6:40:15, and 2:43:28, respectively.<sup>40</sup> The official soundtrack of a video game speaks to a game’s music design because, while the tracks on the OST might not necessarily be experienced in the game exactly as they are heard on the OST, they are still representative of what is experienced in-game. For example, the extra tracks that are included in the OST for *Final Fantasy VII Remake* provide context regarding which areas of the game the developers felt needed expanding musically to avoid repetition. Consider, for example, the additional music that is accessed via jukeboxes. [Jukeboxes are typically located within larger levels, where the player will spend a lot of time without engaging in combat encounters. I can infer from the addition of jukeboxes in these areas, that without combat arrangements of location music to add variety during a play session,] the developers had concerns about listener fatigue in those sections of the game. This type of game mechanic is not uncommon, as seen in *Grand Theft Auto V* (Rockstar Games, 2013), *Final Fantasy XV* (Square Enix, 2016), and *Forza Horizon* (Playground Games, 2021). This mechanic is becoming more common, allowing players agency in assessing and dealing with their own fatigue diegetically. Furthermore, the length of OSTs in comparison with the expected runtime of the games provides some insight as to the developers’ view of musical expectations of their players. While the difference in hosting medium (e.g., CD to Blu-ray) can account for some of the difference in soundtrack size across console generations, the *Final Fantasy VII Remake* soundtrack at over eight and a half hours is much larger than many contemporary video game soundtracks. While the official soundtrack does not demonstrate the distribution of the tracks within the game, nor the amount of time a player can expect to be exposed to specific tracks, it is possible to draw insights.

Table 1 shows the average amount of time that it takes to finish the main story, the main story with extra content, and to one hundred percent complete both *Final Fantasy*

TABLE 1. The total time taken to complete both *Final Fantasy VII* and *Final Fantasy VII Remake*, averaged from self-reported data taken from HowLongToBeat.com, taken on 3rd October 2023.

	Final Fantasy VII	Final Fantasy VII Remake
Main Story	36.5 hours	33 hours
Main Story + Extra	50 hours	41.5 hours
Completionist	82 hours	86 hours

40. *Final Fantasy VII Remake*’s soundtrack is roughly eight hours thirty-five minutes by comparison.

*VII* and *Final Fantasy VII Remake*.<sup>41</sup> A comparison of the columns of Table 1 demonstrates that the average playtime, at least for the main story and one hundred percent completion is roughly equal. This is surprising, as *Final Fantasy VII Remake* covers roughly one-third of the original game's story, but it offers almost twice the amount of music for the same expected runtime.<sup>42</sup> From this I can infer that the developers feel that the landscape of musical expectations has changed significantly and that the original material is insufficient for covering up to eighty-six hours of gameplay, even though in 1997 that amount of music was deemed as sufficient.

#### A COMPARISON OF BATTLE MUSIC

A distinction between the soundtracks of these games is that there is an increased number of tracks for battle situations in *Final Fantasy VII Remake*. As I mention in the introduction, battle music in JRPGs is a notorious problem area. Traditionally in JRPGs, battle music and boss music, although filling similar roles are considered separate. Boss music is generally more intense and less frequently encountered, whereas battle music is experienced often.<sup>43</sup> The developers increasing the number and variety of tracks for standard battle encounters in the game is not surprising. In *Final Fantasy VII*, most non-boss battles are accompanied by the track "Let the Battles Begin." When considering the runtime of the game (see Table 1), the use of a single track throughout most combat encounters within the game may eventually become fatiguing given the "grinding" nature of JRPGs.<sup>44</sup> By comparison, *Final Fantasy VII Remake* has four different variations of "Let the Battles Begin," which are used in different chapters of the game, as well as additional variations for three boss fights: "Abzu," "Crab Warden," and "Specimen Ho512." In addition, *Final Fantasy VII Remake* utilizes the parallel approach to include battle versions of location music, as well as arrangements for when the players health is critical.

Chapter 1 of *Final Fantasy VII Remake* is discussed in more detail in the next section of this paper, but as an example during the first chapter, combat encounters before entering the reactor are accompanied by "Bombing Mission," then "Let the Battles Begin! - Ex SOLDIER" is introduced during a single encounter before a battle arrangement of "Mako Reactor 1" is used during combat encounters inside the reactor. Then after defeating the boss, "Getaway" plays during combat encounters until the end of the

41. This data is the average of self-reported data from nearly 8,000 players across both titles. More details can be found at the following sites: HowLongToBeat, "Final Fantasy VII," last updated November 21, 2023, last accessed November 21, 2023, <https://howlongtobeat.com/game/3521>; HowLongToBeat, "Final Fantasy VII Remake," last updated November 21, 2023, last accessed November 21, 2023, <https://howlongtobeat.com/game/57686>.

42. I choose to round up to a third, as the second disc of the original *Final Fantasy VII* is much longer than the first, but additional content has been added to *Final Fantasy VII Remake* that makes it harder to compare as a straight percentile.

43. Ryan Thompson, Dana Plank, Jullianne Grasso, Karen Cook, "The Music of Midgar: Comparing FF7 Remake's Soundtrack to FF7," *VGMTogether*, 2020, MP4, 1:05:00, <https://www.twitch.tv/videos/947097640>.

44. Armstrong, "Sounding the Grind," 1.; Sarah Gates, "Enjoying the Grind: Musical Encouragement of Repetitive Action in *Final Fantasy X*" (presentation, Society for Music Theory, Vancouver, November 3, 2017).

chapter. If the boss track “Scorpion Sentinel” is included, then this means that five pieces of battle music are heard within the first hour of gameplay. In *Final Fantasy VII*, Bombing Mission plays until the player enters the reactor, then “Let the Battle Begin!” plays for every battle until the boss, after which “Bombing Mission” plays during the boss fight and until the player escapes the reactor. *Final Fantasy VII* has less musical variety within combat encounters of the opening mission and begins to set the expectation for players that they will be hearing this music often. By comparison, *Final Fantasy VII Remake* uses “Let the Battle Begin! - Ex SOLDIER” as a singular event, more as a nod to returning fans, while newer parallel approaches play a more prominent role and give a more dynamic shape to the musical experience.

In Chapter 2 of *Final Fantasy VII Remake*, there is a version of the original battle music titled “Let the Battles Begin!—Break Through” which is used throughout most of the level after encountering Aerith/Flower Peddler, during which the developers hint that the Whispers are the true boss of the game by playing a short segment of the original boss music “Fight On!” (later renamed to “Those Who Fight Further”).<sup>45</sup> Throughout Chapter 2, the battle music is dynamically mixed using a parallel approach, with a fuller arrangement during combat, and a lesser arrangement of percussion and lower register instrumentation during sections of exploration between encounters.<sup>46</sup> During combat, the leitmotif never reaches the climax, musically informing the player that the situation is not over.<sup>47</sup> During exploration, the lesser arrangements keep the driving pace of the battle music, while giving the players some breathing room. This dynamic mixing continues until the final encounter in the streets of Sector 8, where the full arrangement returns, and the leitmotif finally reaches the musical climax. As this final encounter of the chapter is not a boss per se, the original boss theme is not introduced. However, the reaching of the musical climax and resolution gives a finality to the last encounter of the Chapter.

Both early chapters’ music systems feature dynamic mixes that allow for faster response times from the music system than the “hard cuts” allowed by fully transitional approaches.<sup>48</sup> This focus on parallel mixing is not unusual, as psychology research finds that faster and more complex rhythms contribute to the induction of emotional arousal through rhythmic entrainment.<sup>49</sup> While in the original title, the game could induce these changes by transitioning to a battle piece that is faster paced than the location music; in *Final Fantasy VII Remake*, this can be done much more subtly using parallel mixing. Multiple interviews with Square Enix developers indicate that this was a conscious decision.<sup>50</sup> For example, in one, music supervisor of *Final Fantasy VII Remake* Keiji

45. Thompson, Plank, Grasso, and Cook, “The Music of Midgar.”

46. Thompson, Plank, Grasso, and Cook, “The Music of Midgar.”

47. Thompson, Plank, Grasso, and Cook, “The Music of Midgar.”

48. Collins, Game Sound, 59.

49. Weibke Trost and Patrik Vuilleumier, “Rhythmic Entrainment as a Mechanism for Emotion Induction by Music: A Neurophysiological Perspective,” in *The Emotional Power of Music: Multidisciplinary Perspectives on Music Arousal, Expression and Social Control*, eds. Tom Cochrane, Bernardino Fantini, and Klaus Scherer (Oxford: Oxford University Press, 2013), 213–225.

50. Jennifer Walden, “The Fantastic Sound of FINAL FANTASY 7 REMAKE,” *A Sound Effect*, August 26, 2020, accessed December 20, 2020, <https://www.asoundeffect.com/final-fantasy-7-remake-sound/>; Taylor-Kent,

Kawamori explains that while transitions may be used for battle music at times, the audio team focused on adding active layers to location music using a parallel approach.<sup>51</sup> Kawamori further explains that location music often has three versions: combat, non-combat (exploration), and crisis; where crisis variants are used when the player's health is extremely low, which supports the focus of music design in this game on using parallel mixing to excite players.<sup>52</sup> This is expanded on in a *PlayStation Official Magazine—UK* exposé, where co-director Naoki Hamaguchi explains that it was important for Square Enix to technologically “move into the future,” describing the music system as being able to keep the same melody line while ensuring music can dynamically become “more urgent and louder when you get into a fight.”<sup>53</sup>

These examples of music design in the early missions of *Final Fantasy VII Remake* support the idea that the developers have a growing awareness of listener fatigue as an issue for battle music, and how modern music design can positively enhance player experience. The developers mitigate repetition by decreasing the number of instances where a player will be exposed repeatedly to a single arrangement/piece throughout the first few missions. Additionally, they use a parallel approach to music design that both adds interactivity to the music and changes the texture to further decrease fatigue. This has similarities to other modern action Role-Playing Game (RPG henceforth) titles such as *Rise of the Tomb Raider* (Crystal Dynamics, 2016), which uses a parallel approach to determine the intensity of percussion that is generated and played during exploration, combat, and stealth encounter. Furthermore, while I argue that players have learned to be more critical of the games they play, as the medium evolves, and current technology becomes more familiar, it is important to understand that early experiences within a game can play a role in reinforcing these expectations or subverting them. By moving away from the long-standing paradigm of battle encounters as separate musico-spatial events, toward dynamically responsive arrangements of location music, the developers reinforce the modern expectations of the player, by delivering an experience closer to that of contemporary titles.<sup>54</sup>

Beyond regular battle music, boss battle music also speaks to the evolving expectations of audiences. In the original *Final Fantasy VII*, only a few select bosses have multiple tracks across separate phases of the fight; in modern games, however, it is not unexpected for most main story bosses to have multiple phases and separate arrangements for each phase. While this does not occur in every boss battle in *Final Fantasy VII Remake*, “Scorpion Sentinel,” the boss music from Chapter 1, has three phases that synchronize with different sections of the battle. These sections are transitioned between via cutscenes, and the music increases in intensity to match the increasingly aggressive behavior of the Scorpion Sentinel as its health drops below thresholds. This approach to boss

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“Final Fantasy VII Remake: Fantasy Finally Becomes Reality”; Taylor-Kent, “Exclusive Collector’s Guide to Final Fantasy VII Remake.”

51. Walden, “Fantastic Sound of Final Fantasy 7 Remake.”

52. Walden, “Fantastic Sound of Final Fantasy 7 Remake.”

53. Taylor-Kent, “Exclusive Collector’s Guide Final Fantasy VII Remake,” 11.

54. Armstrong, “Sounding the Grind,” 1.

battle music is seen in contemporary titles such as *Bloodborne* with Ludwig, the Accursed/Holy Blade; *God of War* (Sony Santa Monica, 2018) with the multi-stage fight versus Baldur; and *Strangers of Paradise: Final Fantasy Origins* (Team Ninja, 2022) with the Tiamat boss battle. Between the decisions highlighted in this section, and Hamaguchi’s stated interest in moving toward more futuristic technology and game design, I can infer that these musical decisions are made to ensure that *Final Fantasy VII Remake*’s experience is more in line with my suggested idea of modern expectations in RPGs.<sup>55</sup>

### A COMPARISON OF THE BOMBING MISSION

*Final Fantasy VII* and *Final Fantasy VII Remake* both use multiple pieces of music to support their cinematic opening missions, using music design approaches that are better suited to their respective game engines. For example, the proprietary engine of *Final Fantasy VII*, which transitions between modules to render various aspects of the game uses a transitional approach to music design.<sup>56</sup> By comparison, *Final Fantasy VII Remake* uses a combination of the parallel, ornamental, and transitional approaches in the opening mission. Figure 3 shows a timeline for events that take place in the opening mission and displays how each track that appears in each version synchronizes with gameplay sections. A smaller box within a larger box denotes the use of either another version of a piece of music (where layers are mixed in/out) or another piece of music (which is transitioned to and from) in the same section, while white spaces between colored boxes signify a lack of music.

In *Final Fantasy VII*, the game begins with a cutscene over which “Opening - Bombing Mission” plays. As the cutscene ends, the “Bombing Mission” part of the track begins and loops during exploration and combat until the player enters the reactor. From this point, “Mako Reactor 1” plays during exploration but transitions to “Let the Battles Begin!” when the player enters combat. Upon finishing a combat encounter, “Victory Fanfare” plays and then “Mako Reactor” resumes until the next battle. This musical loop continues until the player plants the bomb at the core of the reactor (over which “Mako

Gameplay Segments in Opening Mission	Opening Cutscene	Exploration and Combat before entering Reactor	Enter Reactor	Exploration and Combat inside Reactor	Planting Bomb	Scorpion Sentinel Boss Battle	Escaping the Reactor	Explosion Cutscene
Music in FF7	"Opening - Bombing Mission"		"Mako Reactor 1"	"Mako Reactor 1" "Let the Battle Begin!" "VF"		"Bombing Mission" "VF"		
Music in FF7R	"Midgar, City of Mako"	"Bombing Mission" "BM" Dialogue Mix	"Let the Battle Begin! Ex SOLDIER"	"Anxiety"	"Mako Reactor 1" "Mako Reactor 1 - Battle Edit"	"Trail of Blood" Piano "Scorpion Sentinel"	"Getaway" "VF"	"Shinra Theme" "Getaway"

FIGURE 3. A timeline of the music in the first mission of both *Final Fantasy VII* and *Final Fantasy VII Remake*, and how this music aligns with sections of gameplay. VF denotes Victory Fanfare, and empty slots denote silence.

55. Taylor-Kent, “Exclusive Collector’s Guide Final Fantasy VII Remake,” 11.

56. Walker, “Gears: A Look Inside the Final Fantasy VII Game Engine,” 9.

Reactor” plays). This action initiates the Scorpion Sentinel boss battle. “Bombing Mission” accompanies the boss battle and continues to play until either the player leaves the reactor within the allotted time, which ends the mission successfully, or the timer runs out, blowing up the reactor and putting the player into a game-over state, whereby they can choose to play the mission again.

*Final Fantasy VII Remake*, much like with the original, opens with an impressive cutscene. Over this cutscene, a live recorded and fully orchestrated version of the first half of the original “Opening - Bombing Mission” track plays, which is called “Midgar, City of Mako.” As with the original, when the cutscene ends and the player is given control over Cloud, “Bombing Mission” begins. After a few tutorial fights, the player gets a small expositional cutscene, and a sparser arrangement of “Bombing Mission” plays, which makes room in the mix for dialogue. When the player moves to continue the mission, the full arrangement of “Bombing Mission” fades back in and continues to play until the player enters the reactor. Unlike the original, there is a cutscene and an extremely brief segment of gameplay with no accompanying music before the player is rewarded with a modern version of the original battle music “Let the Battles Begin! - Ex SOLDIER” during a single combat encounter, before fading back to musical silence before another cutscene. In this cutscene, the player sees flashbacks to Nibelheim and hears a short section of “Anxiety,” musically foreshadowing that there is something wrong with Cloud’s memories. After another moment of musical silence, the location theme “Mako Reactor 1” is introduced and loops as the player explores the reactor. In the reactor, during combat the music fades into a more intense variant that is called “Mako Reactor 1 - Battle Edit.” When combat is over, the battle mix fades back into the original exploration mix. This continues until the player plants the bomb, and Cloud has a vision and sees Sephiroth, while a short piano arrangement of “Trail of Blood” plays, musically foreshadowing later story beats and upcoming danger. At the end of this cutscene, the boss battle for Chapter 1 begins, accompanied by “Scorpion Sentinel.” Unlike with the original game, this piece of music is specifically for the boss fight and responds dynamically to the boss’s health gauge. When the boss’s health is below the thresholds of 75% and 50%, short transitional cutscenes play, and after which new sections of the “Scorpion Sentinel” piece play. After defeating the boss, the situational music “Getaway” plays to match the even more frantic energy of escaping from a reactor in meltdown. During this part of the chapter, the situation music is prioritized over the previous battle music during any combat encounters until the end of the mission. As the player makes their way to the exit, a cutscene is triggered by the player moving up a ladder, and a cutscene plays where Cloud saves Jessie while a more rhythmic, staccato section of “Getaway” plays, heightening the excitement of the player. After this section, the normal “Getaway” loop resumes using a more transitional approach rather than parallel fades. During the player’s escape, another cutscene and a new section of “Getaway” are triggered when encountering enemies to increase tension, after which tension is brought back down by Barret singing a rendition of the “Victory Fanfare” over the top of the “Getaway” loop, demonstrating the ornamental approach to music design. The music system then returns to the regular “Getaway” loop, which continues through to the end of the chapter. Upon



leaving the reactor, a final celebratory section of “Getaway” is triggered, followed by a short cutscene featuring “Shinra’s Theme,” which musically foreshadows the militaristic threat of Shinra. The player exits the reactor as it explodes in earnest, as “Getaway” plays out the chapter’s end.

*Final Fantasy VII Remake*, by using a combination of parallel, transitional, and ornamental approaches, does not innovate but remains true to standard practices. However, there are some ideas worth noting when comparing it with the original. As Figure 2 demonstrates, over the course of the first mission in *Final Fantasy VII*, the player will encounter four musical pieces, namely: “Opening - Bombing Mission,” “Mako Reactor,” “Let the Battles Begin!” and “Victory Fanfare.” By comparison, in *Final Fantasy VII Remake* players experience six full pieces of music, two additional arrangements of existing pieces, four short pieces that musically foreshadow later story beats, and three short segments of musical silence. These opening missions can be treated as microcosms of the larger musical experience, where design choices in the first hour of play can reflect the music design of the whole game. As such, the choice to include additional music in this mission plays a significant role in reducing the likelihood of listener fatigue in the first mission, while setting a precedent for what players should expect going forward. Similarly, the inclusion of alternative edits of the reactor and bombing mission themes imply an importance to arrangement/shape in musical repetition. This is implied as although the main melodies for specific areas continue across arrangements, the shape of the arrangement changes giving some variety and reducing the likelihood of listener fatigue. Furthermore, the use of the four instances of musical foreshadowing or ornamentation (“Victory Fanfare,” “Shinra’s Theme,” “Trails of Blood,” and “Anxiety”) not only give nods to later story beats; they act as palate cleansers. These tracks are encountered after longer segments of gameplay, where the player will have been exposed to the same musical content repeatedly (albeit in differing arrangements), so these shorter tracks break up the experience musically, as do the three instances of musical silence. By comparison, in *Final Fantasy VII*’s opening mission, while the player hears two different pieces during combat, they are quickly introduced to the paradigm where battle music will make up a substantial portion of the next thirty-six to eighty-two hours (see Table 1).

Beyond the effects of these music design choices on listener fatigue, the choices made here reflect on how developers view changes in player expectations. The music design choices in *Final Fantasy VII Remake* reflect those seen in modern action RPG titles such as *Bloodborne*, *God of War 2018*, and *Strangers of Paradise: Final Fantasy Origins*. This supports my suggestion that *Final Fantasy VII Remake*’s developers are not only moving the game’s experience and music design closer in line with modern titles—by moving away from the more grinding game/music design of the original—but also looking to provide an experience closer in quality and style to what is expected by modern audiences.

## DISCUSSION

How music design for video games and the expectations of players regarding game music have evolved in the last twenty-three years is of central interest to researchers of game

audio and procedural music, as well as to video game composers and music designers in the games industry. To my knowledge, prior to this paper, there has been little work analyzing the evolution of music design through the comparative lens of an original game and its remake, although there has been work comparing the same games from a music composition/experience perspective.<sup>57</sup> In this paper, I discuss the game engines used for *Final Fantasy VII* and *Final Fantasy VII Remake* and use this knowledge to contextualize the differences in music design, specifically when it comes to battle music, a notable problem area for listener fatigue, and the opening missions. In doing so, I now discuss my findings with relevance to my research questions:

- RQ1: What do the differences in music design between both games tell us about how players' musical expectations have changed?
- RQ2: What do the differences in music design between both games tell us about how the perception of listener fatigue has changed over time?
- RQ3: What can we learn from the differences in music design that could better inform future composers who are adapting older soundtracks for modern audiences.

With regard to RQ1, there is little that can be learned from the framing device of a remade game to inform us of how actual player expectations have changed. However, the player experience for *Final Fantasy VII* and *Final Fantasy VII Remake* has changed significantly, and the game developers have moved not only the gameplay experience of this JRPG closer to that of contemporary action RPG titles, but the music design as well. For example, the inclusion of systems that allow players agency over music playback (i.e., jukeboxes), and contemporary approaches to music design reflect the idea that developers think that players' expectations and tastes have evolved in the intervening twenty-three years. I suggest that without conducting a user study with players to assess this further, these insights are the most that can be gained by comparing an original and remade title.

With regard to RQ2, across the opening missions of *Final Fantasy VII Remake*, the full official soundtrack, and the microcosm of battle music in the first two chapters of the game, I find that the phenomenon of listener fatigue has likely been considered carefully by the game developers. This is supported by the inclusion of elements to reduce listener fatigue: additional pieces of music; new arrangements of location music for battle/crisis; shorter fragments of musical foreshadowing to act as breaks in longer repetitive segments; sections of varying intensity to match enemy health in boss battles; and the inclusion of the jukeboxes to offer players agency in dealing with fatigue. Furthermore, similarly to how *Final Fantasy VII* has a larger than average soundtrack for an original PlayStation game, *Final Fantasy VII Remake* has a soundtrack that is far larger than the average soundtrack for a game in 2020. This reflects the idea that the original number of tracks is

57. James Denis Mc Glynn, "The 'Cinematic Promise' of Video Game Music: Stylistic Convergence, Current-Generation Remakes, and the Case of Final Fantasy VII," *Journal of Sound and Music in Games* 4, no. 4 (2023): 108–38; Thompson, Plank, Grasso, and Cook, "Music of Midgar"; Game Score Fanfare, "How Final Fantasy VII Remade Its Soundtrack," July 5, 2020, accessed November 1, 2023, <https://www.youtube.com/watch?v=59c3xz76M8o>.

not sufficient for the modern experience and is further supported by the additional efforts that have been made. While in the original title, the addition of a larger soundtrack seemed enough from a developer perspective to combat repetition, the developers twenty-three years later have put much more consideration into dealing with this issue, especially where battle is concerned. Furthermore, they have done this while also bringing the game experience closer to that of contemporary RPG titles.

With regard to RQ3, I find that not enough can be drawn from the conducted analysis to provide a complete framework for composers who, in the future, are working on remakes of older video games. However, there are some valuable insights that should be considered. The first insight is that composers should not be afraid to make changes to existing source material. For example, the original version of “Bombing Mission” did not have to account for frequency clashes between music and dialogue, as there was no voice acting in the original title. In the Remake, however, the music team used a subtractive approach to take away layers that would clash with the vocal performances while retaining the core identity of the theme. This is one example, but there will be many situations during development of a remake that the original will not have had to account for. As such, I propose that composers should trust their best judgment in taking away elements of the original arrangements to better suit the needs of a modern game. A second insight is that the music team and developers were aware of how repetition of music in JRPGs is viewed, and that they were not afraid to deviate from the source material. As players’ expectations and familiarity with technology and music design approaches have evolved, it has become clearer that specific techniques and approaches used in the original *Final Fantasy VII* are dated. The job of a composer remaking older soundtracks for a modern audience is not only to preserve the spirit of the original, but to ensure that the source material is adapted in a way that best represents the original to fit newer expectations.

A third insight is that if a composer identifies a problem and there is not a neat, existing solution, it is sometimes better to offer the player agency in how they deal with it. For example, musical repetition only becomes more problematic as games get longer, and in the case of *Final Fantasy VII Remake*, a combination of music design approaches, and an eight-and-a-half-hour soundtrack is not the perfect solution to the problem. However, the developers allow the players to have in-game control over music playback via jukeboxes, and even built a small feature around this, where players can collect/buy discs throughout the campaign to support their inclusion diegetically. In doing so, the developers accept that the problem is not fully dealt with and allow the players agency over how they mitigate repetition, without breaking immersion by playing external music sources. For composers this may mean making additional tracks that can be used within the diegesis of the world, in place of the tracks the player provides for specific locations.

As a final insight, while solutions may not exist to fully deal with the problem of musical repetition, as technology evolves, composers should be prepared to work alongside it to make the best experience possible for the players. The musical landscape of games has clearly changed in the intervening twenty-three years, and the adoption of modern music design techniques has made for a stronger experience in *Final Fantasy VII Remake*. As games continue to grow in length, it may be necessary to adopt procedural

approaches to music to further mitigate repetition. Although the music system for *Dying Light 2* is not called procedural by its developers, it has procedural features that control the musical arrangement during play.<sup>58</sup> In *Dying Light 2*, this means the game transitions between eight different music systems for specific scenarios such as climbing water towers, combat, and exploration. This approach allows the system to support the narrative, while offering much more musical diversity throughout longer play sessions. While *Final Fantasy VII Remake* does not use any procedural music techniques, the inclusion of such technology could lead to a stronger experience in future remakes, especially if the games move toward potentially “endless” live service models.<sup>59</sup>

Thus, I shed light on how the remaking of original games can offer a unique perspective on how the evolution of music design reflects perception of listener fatigue in game development and players’ evolving sonic expectations in modern games. Furthermore, I offer some considerations for future composers who wish to adapt older material for modern audiences. Finally, I would like to underline the importance of the role that technology and novel approaches to music design play in alleviating listener fatigue, and how adapting to future technologies could be vital in reducing listener fatigue in potentially endless live-service games. ■

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