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Megan Franklin, Student

Dr. Michael Baker, Major Professor

Dr. Lance Brunner, Director of Graduate Studies

“Songs of the Underground”: Crafting a Unique Experience Through Music

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Music in the
College of Fine Arts
at the University of Kentucky

By

Megan Mae Franklin

Lexington, Kentucky

Director: Dr. Michael Baker, Professor of Music Theory

Lexington, Kentucky

2023

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Abstract

The academic study of video game music, known as Ludomusicology, is a younger research area in the world of musicology, with the earliest works having been published in the late 80's and early 90's. Despite its young age, Ludomusicology is becoming a staple in the academic world, with scholars such as Melanie Fritsch, Andra Ivănescu, Michiel Kamp, Tim Summers, and Mark Sweeney dedicating their time to the subject. This thesis uses musical analysis as the basis of exploring the relationship between music and aspects of video game creation and player interaction. The case study for this project is the 2015 two-dimensional role-playing game *Undertale*, created and scored by Toby Fox. In positioning music as a part of the interactive ecologies of video games, I argue that the main strengths of the game lie in the connection of the music to the games worldbuilding, narrative storyline, and application of morality. Through analyzing the soundtrack in relation to how it interacts with these strengths, I demonstrate the undoubtable influence the music has as the main source of player interaction and overall experience with the game. Each chapter investigates the three different facets of gameplay and the inherent significance that music creates within the game.

KEYWORDS: Undertale, music analysis, leitmotivs, Ludomusicology, worldbuilding

Megan Mae Franklin

(Name of Student)

8/13/2023

Date

Note: this thesis contains spoilers for the gameplay and all endings of *Undertale.*

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This thesis was written during one of the most challenging and difficult times of my life, from COVID, to political unrest, to learning to deal with the death of my mom. This thesis would not be where is it today without the help and support of my family, friends, and professors I have had. There are so many people that have given me support and motivation to complete this thesis that I do not think I have enough space to write out all their names.

To start, I am so thankful for my family, for they have always been there to hear about me ramble about school, even when they have no idea what I am talking about. I am eternally grateful to my mom and maternal grandmother and grandfather; I will never forget all that they have done for me. I want to thank all the friends that I have made during my time at Berea College and at UK, I will forever treasure and think back on those friendships.

I am so thankful for my advisors, Dr. Javier Clavere and Dr. Michael Baker. Thank you for being there for every question, every concern, and for having your door always open for your students. I also want to thank all the professors and facility that I got to take courses with and talk to, including those outside the Music Department of both Berea College and UK. It is because of these individuals that I decided to pursue multiple degrees in music, I would not be here without their support and influence.

A special thank you to Materia Collective LLC for giving my permission to include figures from the official Undertale Complete Piano Score. The official score is available for purchase on their company website.

Table of Contents

Abstract ii
Acknowledgements iii
Table of Contents iv
List of Figures v
“Start Menu” 1
Introduction 1
Analyzing Game Music 4
Background 6
Chapter Summaries 8
Chapter 1: "Once Upon a Time" 11
Creating the Environment 12
Musical Cues 19
Player Interaction 23
Chapter 2: "It's Showtime" 28
The Stories They Tell 29
Communicating with Sounds, Not Words 35
Chapter 3: "The Choice" 43
Morality and Player Choice 43
Second Chances and Second Tries 56
Chapter 4: "Good Night" 61
Bibliography 64
Biographical Sketch 68

List of Figures

Figure 1. 1 "Once Upon a Time," mm. 1-4 14
Figure 1. 2 "Ruins," mm. 1-7 15
Figure 1. 3 "Waterfall," mm. 1-4 16
Figure 1. 4.1 -1. 4.3 "Another Medium," mm. 19-28, 29-36, 45-55..... 17
Figure 1. 5 "Snowy," mm. 1-8..... 19
Figure 2. 1 “Your Best Friend,” mm. 5-8 31
Figure 2. 2 “Your Best Nightmare,” mm. 1-2 32
Figure 2. 3 “Bonetrousle,” mm. 5-8 34
Figure 3. 1 “Premonition,” mm. 1-8..... 47
Figure 3. 2 “Memory,” mm. 1-8 48
Figure 3. 3 “It's Raining Somewhere Else,” mm. 9-16..... 51
Figure 3. 4 “Last Goodbye,” mm. 73-81..... 52
Figure 3. 5 "The Choice”..... 54
Figure 3. 6 "An Ending," mm. 18-25..... 57

“Start Menu”

Introduction

From the creation of opera during the Baroque period, to classical symphonies and concertos, to the twelve-tone music of Hauer and Schoenberg, to the rise of electronic music of the late twentieth century, music is constantly evolving. The steady evolution of musical techniques and styles has offered composers from all walks of life the ability to showcase their creativity outside of the traditional music performance environment. Electronic music, especially, has opened the metaphorical floodgates to the endless possibilities music and sound can provide in terms of storytelling and expression. Many academic programs across the United States and Europe now include concentrations in electronic music composition in their music programs, alongside traditional musical composition.

While electronic music is a relatively recent genre of music, electronic music composers are now beginning to be recognized by the broader public as serious composers in their own right. Classic FM, a UK-based classical music radio station, published an article titled "The 20 best video game soundtracks of all time."[1] The article features familiar titles such as *Super Mario Bros*, *The Legend of Zelda*, *Halo*, and *Uncharted*, along with many others. Why would a classical music radio station publish an article on video game music? While classical music still has a large audience, video

[1] “The 20 best video game soundtracks of all time,” Classic FM, last modified March 20, 2023, https://www.classicfm.com/discover-music/periods-genres/video-game/best-scores-soundtracks-all-time/.

game music has become one of the most exciting areas of contemporary music for people to explore. Combine this with the ever-improving graphics and playability of video games via computer programming, and you have a powerful duo. Julianne Grasso references this same radio station in a dissertation she published in June 2020,[2] in which she discusses the radio station's yearly "Classic FM Hall of Fame." For context, the Classic FM Hall of Fame is an annual compilation of the top 300 classical works as polled by listeners. During the 2013 iteration of the competition, Nobuo Uematsu's collective soundtracks for the *Final Fantasy* series reached the top three position. Out of 200,000 votes, voters elevated *Final Fantasy* to reach the top three, surpassed only by Rachmaninoff's Piano Concerto no. 2 and Vaughan Williams's *The Lark Ascending*.[3]

How was it that the *Final Fantasy* series was able to reach the top three in Classic FM's ranking? Of course, there was some campaigning at work, with gaming fan communities coming together to give Uematsu and other video game composers the recognition they deserve. Nevertheless, this was all possible with the overwhelming support from not only the listeners of Classic FM, but also those who enjoy video game music.

Commercial broadcasters and publishers such as CBS and *Rolling Stone* have also published articles and pieces on the success and popularity of music and video games. This rise in popularity of video game music is accompanied by a steady increase of

[2] Julianne Grasso, "Video Game Music, Meaning, and the Possibilities of Play" (PhD Dissertation, University of Chicago, 2020).
[3] "Classic FM Hall of Fame 2013," Classic FM, last modified April 2, 2013, https://www.classicfm.com/radio/hall-of-fame/2013/.

research and discussion in the academic world. Academic research into video game music began around the late 1980s and early 1990s and developed into the 2000s.[4] A prominent figure in early video game music and sound research is Karen Collins, an associate professor in the Department of Communication Arts at the University of Waterloo and Canada Research Chair in Interactive Audio at the University of Waterloo Games Institute. Her book *Game Sound: An Introduction to the History, Theory and Practice of Video Game Music and Sound Design* is considered by many as an important turning point in the field, elevating video game music to a subject worthy of serious academic study.[5] The number of articles and studies on the subject of Ludomusicology has also steadily risen within the last thirty years, including many that I will reference in this thesis. Major developments within Ludomusicology include the founding of the Ludomusicology Research Group by Michiel Kamp, Tim Summers and Mark Sweeney in 2011.[6] *The Journal of Sound and Music in Games*, founded in 2020, is a peer-reviewed journal with the purpose of presenting high-quality research concerning all areas of music and sounds in games.[7]

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[4] Matthew Belinkie, "Video Game Music: Not Just Kid Stuff," Videogame Music Archive, last modified Dec. 15, 1999, https://www.vgmusic.com/information/vgpaper.html.
[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).
[6] Ludomusicology, Video Game Music Research Group, last modified April 28, 2023, https://www.ludomusicology.org.
[7] *Journal of Sound and Music in Games*, last modified May 1, 2023. https://online.ucpress.edu/jsmg.

Analyzing Game Music

In this thesis project, I demonstrate that video game music is intrinsic to the creation and playability of the game itself, taking a theoretical and analytical approach to identify specific musical meanings regarding in-game activity. In positioning music as a part of the interactive ecologies of video games, I argue that the main strengths of the game lie in the connection of the music to the game's worldbuilding, narrative storyline, and application of morality. Through analyzing the soundtrack with how it interacts with these strengths, I will demonstrate the influence the music provides as the main source of player interaction and overall experience with the game *Undertale*. Each chapter investigates the three different facets of gameplay and the inherent musical significance they create.

When analyzing video game music, one must be aware of both the limitations and liberties that come with such a diverse genre of music. For instance, one must embrace the often-chaotic nature of interactive multimedia, where listeners are also the game’s players, exerting a far greater control over their interaction with the music than in the concert hall. On one hand, some games actively encourage their players to interact with the music as they play, from directly creating the music in a performance like *Guitar Hero* to having the music play from in-game instruments such as *The Legend of Zelda: Ocarina of Time*. Another way of interaction comes from completing in-game levels or boss fights, as in *Super Mario Bros* or *Pokémon: Scarlet and Violet*. On the other hand, some games consider the musical soundtrack as "background music," assuming that music is not a part of the "foreground" in some way. These games focus the

player's attention on the primary interactions: pressing a button to move forward, collecting items, fighting other characters or NPCs (non-playing characters), etc.

The study of video game music, known as Ludomusicology, is a relatively recent sub-discipline within academic music study, with musicology and theory being the main disciplines. Many of the basic practices and techniques of researching or analyzing video game music originate from other forms of musical media and literature, with the focus on the actual gameplay being a separate factor. Film and Media Scoring shares many parallels in both the formal compositional techniques and overall aesthetic to opera studies, with the outcome of both being the enhancement of the accompanying visuals through music. A popular text on this topic is Frank Lehman's *Hollywood Harmony: Musical Wonder and the Sound of Cinema*.[8] Composers in both genres will often have an extensive degree of musical knowledge, from learning basic theory in piano lessons to taking courses that focus on advanced compositional techniques. Another approach to study can simply come from personal exploration; nevertheless, many of the tools and techniques composers use originate from the same classical literature. It is from classic composers like Beethoven, Bach, and Mozart that many of the fundamental techniques of composition derive.

Unlike film music, the successes and failures of video games stem from the player's interaction and decision making within the virtual world the game presents. Whereas cinema audience members merely view what is in front of them, video game

[8] Frank Lehman. *Hollywood Harmony: Musical Wonder and the Sound of Cinema* (New York: Oxford University Press, 2018).

players experience the game visually and aurally, which directly influences their overall involvement. In direct reference to my study, the music from the game *Undertale* is connected to many aspects of player interaction, from directly triggering musical cues to involvement in the in-game narratives. This thesis will show the integral nature of musical involvement in both the game progression and player immersion.

Background

When it comes to the study and analysis of video game music, there are a wide range of sources available that explore a variety of topics game music. Generally speaking, the majority of scholarly research on video game music focuses on: 1) an analysis of the compositional techniques used through the lens of music technology; or 2) a descriptive account that features an analysis of musical composition techniques that relate to an in-game function. Karen Collins' *Game Sound*[9] and *Playing with Sound*[10] are two of the most frequently cited sources for establishing important concepts and terms in video game music analysis. J. C. Herz's *Joystick Nation: How Videogames Gobbled Our Money, Won Our Hearts, and Rewired Our Minds* provides a history and critique of the video game phenomenon.[11] These sources provide the foundation for other scholars to publish research articles and scholarly theses and dissertations.

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[9] Karen Collins, *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design* (Cambridge, MA: MIT Press, 2008).
[10] Karen Collins, *Playing with Sound: A Theory of Interacting with Sound and Music in Video Games* (Cambridge, MA: MIT Press, 2013).
[11] J. C. Herz, *Joystick Nation: How Video Games Gobbled our Money, Won our Hears, and Rewired our Minds* (Boxton: Little, Brown, and Co., 1997).

While this thesis focuses on musical techniques in worldbuilding within video games, the research on video games frequently delves into technological and computer science disciplines. To prevent straying too far from the original topic, the sources that have been referenced related to computer science, video games, and music include *Fundamentals of Game Design* by Ernest Adams,[12] *Storytelling Across Worlds: Transmedia for Creatives and Producers* by Tom Dowd,[13] and "Transmedia Storytelling: Moving Characters from Books to Films to Video Games Can Make Them Stronger and More Compelling" by Henry Jenkins.[14] The intention of establishing a baseline of referenced sources for the more technical aspect of video game studies helps to strengthen the connection between music and technology. It is through the use of music software and technology like MIDI, synthesizers, and recording devices that composers can create and publish these soundtracks.

Scholarly articles like "Between Process and Product: Music and/as Performance" by Nicholas Cook[15] and "*Undertale*: A Case Study in Ludomusicology" by Matthew Perez[16] analyze both the process of creation and the product presented. Cook uses interdisciplinary performance theory to discuss the issues and approaches taken to the subject. Perez, a Master's student from the City University of New York, published

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[12] Ernest Adams, *Fundamentals of Game Design* (San Francisco: New Riders, 2014).
[13] Tom Dowd, *Storytelling Across Worlds: Transmedia for Creatives and Producers* (New York and London: Focal Press, 2015).
[14] Henry Jenkins, "Transmedia Storytelling: Moving Characters from Books to Films to Video Games Can Make Them Stronger and More Compelling," MIT Technology Review, last modified January 15, 2003, https://www.technologyreview.com/2003/01/15/234540/transmedia-storytelling/.
[15] Nicholas Cook, "Between Process and Product: Music and/as Performance," *Music Theory Online* 7/2 (2001), https://www.mtosmt.org/issues/mto.01.7.2/mto.01.7.2.cook.html.
[16] Matthew Perez, "*Undertale*: A Case Study in Ludomusicology" (Master's thesis, City University of New York, 2017).

his thesis, which was a complete case study of the game *Undertale*. Perez took a more traditional approach to study the music from the game, providing a descriptive account of the whole game and including analytical statements for selected tracks.

In this thesis, I take a wide-ranging approach to my analysis, and do not consider or claim the techniques and methodologies used to be a comprehensive account of all aspects of the music. The goal of this project is to provide a focused understanding of the music used in the game *Undertale*, and the role that worldbuilding, narrative devices, and questions of morality play within the game. The experience gained from musical analysis of the compositional style of video game music provides an outlook into multiple areas of discussion.

Chapter Summaries

Chapter 1, "Once Upon a Time," establishes the virtual world of *Undertale*, providing the necessary background needed to begin analyzing the music that pertains to the game's worldbuilding. Within this scope, I will analyze the aspects of creating the in-game environment, use of musical cues, and player interaction as it relates to the music soundtrack. I discuss the various techniques and tools used in the worldbuilding process, arguing that the combination of music, game code and interaction offers a new perspective for analysis. I draw upon traditional tools of theoretical study, while also exploring the use of the ALI model, created by Professor Isabella Van Elferen.[17] This

[17] Isabella Van Elfren, "Analyzing Game Musical Immersion: The ALI Model," in *Ludomusicology: Approaches to Video Game Music,* edited by Michiel Kamp, Tim Summers, and Mark Sweeney (Sheffield, UK: Equinox, 2016), 32–52.

chapter also explicates the purpose for my music analysis, with music being a subjective, personalized experience that is capable of shaping our thoughts, feelings, and actions. Using *Undertale* as the main case study, I demonstrate an example of analysis that connects the creation of the game to its enduring musical influence. The remaining two chapters use this established standard to analyze the remaining aspects of game design and player involvement.

Chapter 2, "It's Showtime," explores the narrative aspect of the gaming experience of *Undertale*, and will include analyzing the stories told by the in-game NPCs and the communitive properties of sounds and musical tracks. This chapter aims to examine the numerous point-of-views and interconnecting experiences of the NPCs and how these stories are told without the use of dialogue. In *Undertale*, there are no spoken words, at least not in the traditional sense. Instead, each character is programmed with a unique sound effect that is heard when players interact with NPCs that produce text bubbles. Not only is music used as a supporting tool in narrative storytelling, but also in the use of sound as a replacement for direct speech. This chapter analyzes the effectiveness of the application of music and sound as a substitute for spoken dialogue and the ability to utilize these narratives in overall player connection.

Chapter 3, "The Choice," utilizes the techniques established from the previous chapters to take on the challenge of establishing musical meaning concerning the game's application of morality. As previously mentioned, the use of morality as a game mechanic is rare in CRPGs, and this unique application of morality in *Undertale* stems

from the choices players have in the game progression. Comparing the moral choices provided to players in *Undertale* and *Grand Theft Auto*, the distinction between the consequences of “good” and “bad” choices is vastly different. The treatment of music in *Undertale* is a direct response to the “good” or “bad” choice made by the player in that instance. In *Grand Theft Auto*, the consequence of “good” and “bad” choices have no lasting effect on players or the music heard in the game. I argue that the music takes on a slightly manipulative role with regard to player progression in *Undertale*. The manipulation itself is not malicious, but the game will either provide a reward or negative consequence to player choices in the form of musical cues. For example, some musical tracks are only available based on specific player choices that then lead to certain endings of the game.

Chapter 4, "Good Night," provides a brief conclusion of the analyses discussed in the thesis and a discussion of the possible pedagogical applications of this research. Music offers more than just a glimpse into the composer's ability to create music – it allows the player to transform the meaning of experience into a meaningful connection.

Chapter 1: "Once Upon a Time"

Undertale follows the story of a human child, navigating their way through mysterious and dangerous lands, much different from their own. Here, Earth is inhabited by two races; humans and monsters, who once lived together in peace, but one day war was declared, and the humans came out victorious. The humans then banished the monsters deep underground, locking them away with a magical barrier. Players experience the game through the eyes of this human child who has fallen into the land of the monsters, with the only hope of escape being to find a way through the barrier. From there the game takes on the form of a traditional CRPG, with *Earthbound* being the obvious main influence. Players walk from room to room meeting characters, experiencing puzzles, fighting bosses and occasionally get interrupted by random encounters. The main objective is to reach the end of the Underground and find a way home, all the while encountering monsters around every corner.

While the option to fight and kill monsters is available to players, the game also provides the choice to be friendly and choose mercy. Players learn that when they encounter a monster, they can either fight them, flee from them, or show mercy, and those choices reflect the outcome of the game. There are three official endings, the "Pacifist," "Neutral," and "Genocide" endings, each of which has it’s own set of parameters to be met. The "Pacifist" route means players show mercy to every monster (even the end bosses), the "Neutral" route allows for some leniency to fighting monsters, but players mostly show mercy, and the "Genocide" route involves players

fighting and killing every monster they encounter. The music plays a meaningful and impactful role in each of these routes. This chapter will analyze the use of musical cues and sound objects and how they are reflected in the worldbuilding and player interaction.

Creating the Environment

The start of any interactive narrative experience begins with basic concept ideas. What world does the story take place in? What do the characters look like? Do the characters have an established language? What color pallet should be used? When creating a unique and entertaining gaming experience, these are just a few of the concepts that the creator has to think about. Computer role-playing games (CRPGs) are more focused on player and game setting interaction than other genres of video games. CRPGs have a higher emphasis on game creation in terms of both programming and the ability to create a cohesive gaming world. The creation of the gaming world from the concept on paper to the physical execution is called Worldbuilding. In their article "Worldbuilding Components and Transmedial Extensions of Computer Role-Playing Games," Barbaros Bostan, Başak Tınlı, and Güven Çatak studied trends and patterns in worldbuilding methods.[18] The researchers define Worldbuilding as the process of developing a detailed and plausible fictional world for a novel or story, especially in science fiction, fantasy, and video games. The study found that characteristics such as

[18] Barbaros Bostan, Başak Tınlı, and Güven Çatak, "Worldbuilding Components and Transmedial Extensions of Computer Role-Playing Games," *Kültür Ve İletişim* 23, no. 45 (2000): 273–95.

world generation, entities, and culture are needed to create a consistent, immersive universe.

Tracy Fullerton, game designer and professor of the USC School of Cinematic Arts, defines worldbuilding as "the deep and intricate design of a fictional world, often beginning with maps and histories, but potentially including complete cultural studies of inhabitants, languages, mythologies, governments, politics, economies, etc."[19] For example, world-building guides for roleplaying games frequently have special sections devoted to monsters or weapons and also geophysical indications about the world. For *Undertale*, the fundamental design of the fictional world of the Underground is a direct result of the music Toby Fox composed. According to an interview from August 2016, Toby Fox always composes the music before he starts the coding and designing the game, commenting that "having music helps me decide how the scene should go."[20] It is also important to note from the same interview that over 90% of the songs were composed for the game, with the other tracks coming from previous projects. This is an effective strategy for world-building and creating a unique gaming experience.

There are a handful of tracks from the game that are directly tied to certain areas of the Underground, with "Ruins," "Waterfall," and "Another Medium" being the main environmental-based tracks. The track "Once Upon a Time" (Fig. 1.1) is also notable, as it establishes the mood and storyline of the game. "Once Upon a Time" is

[19] Tracy Fullerton, *Game Design Workshop: A Playcentric Approach to Creating Innovative Games* (New York: CRC Press, 2018), 102.
[20] Spencer Birch, "Talking *Undertale* with Toby Fox," We the Nerdy, last modified Aug. 18, 2016, https://wethenerdy.com/talking-undertale-with-toby-fox/.

heard at the start the game and also plays over a retro-themed flashback sequence that explains the main plot of *Undertale*. This track introduces the *Undertale Theme* leitmotiv, a four-measure pattern of quarter notes and half-notes, which is incorporated in numerous other tracks.

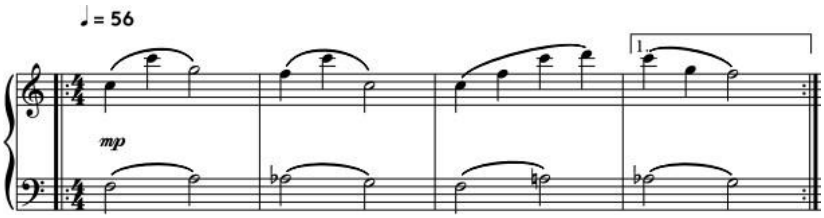

Figure 1. 1 "Once Upon a Time," mm. 1-4

The track "Ruins" (Fig. 1.2) is the first environmental track players hear when entering the Underground, in an area named The Ruins. The Ruins are reminiscent of modern ruins most would imagine when hearing the word “ruins,” with stone buildings with pillars and brick walls covered in vines, with a few cracks in the walls and some evidence of aging. The main color scheme uses different shades of violet and purple, with black and white used for shadows and highlights. The color scheme of these rich purples highlights the regal nature of the Ruins, referencing to the past history of the Underground before the war. The track "Ruins," composed in the key G[#] minor, is energetic, up tempo, and features active rhythms in both the melody and bass lines, using a combination of dotted-quarter, eighth, and sixteenth-note patterns. The harmonies and rhythms are fun and bouncy, providing players with an encouraging atmosphere during the portion of gameplay in which puzzle-solving and conflict resolution emerge as core elements of *Undertale's* interactivity. "Ruins" also includes

two important musical leitmotivs that will be heard in various other pieces, the *Ruins Theme* (mm. 3-6) and *Underground Ostinato* (bass of mm. 1-2).

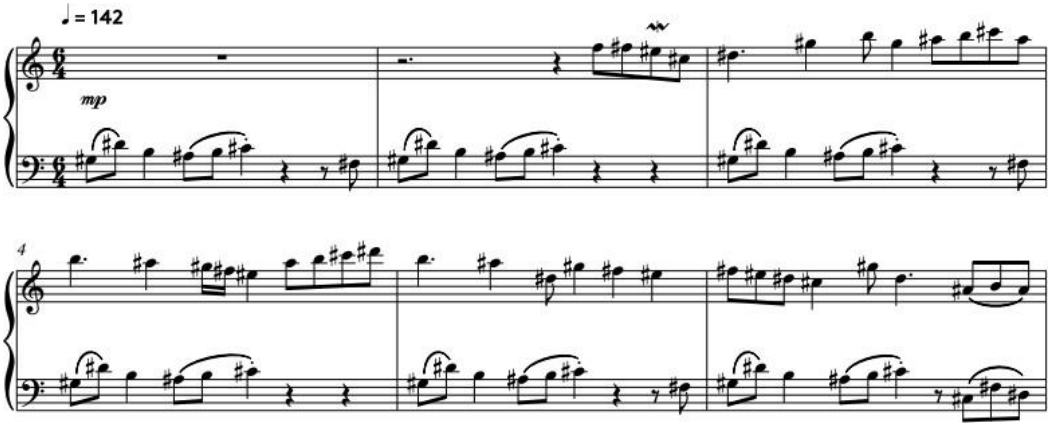

Figure 1. 2 "Ruins," mm. 1-7

The second environmental track players experience after exploring the Ruins is "Waterfall" (Fig. 1.3). The Waterfall area resembles traditional swamps or marshes, withmany waterways creating lakes and waterfalls full of water-based plants and reeds. Thetrack itself is sluggish in tempo and features a slow harmonic rhythm to portray the feeling that players are walking through the thick, swampy marsh, trying to find a way out of this region. The track's main melody is a variation of the *Underground Ostinato*, includes a reappearance of the *Ruins Theme* in the middle, and ends with a secondary melody. Another track that occurs as the player explores the Waterfall area is "Quiet Water," a brief ten-measure piece that features a single eight-bit sound playing chords on top of the main "Ruins" melody.

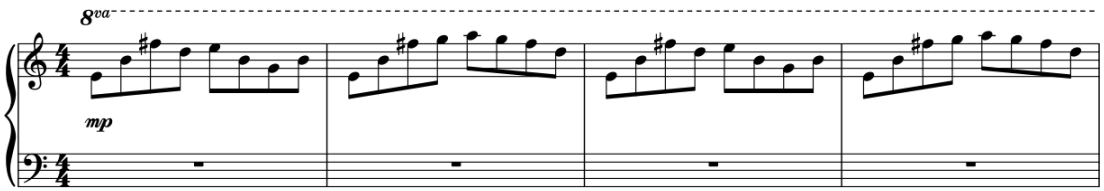

Figure 1. 3 "Waterfall," mm. 1-4

The third and final environmental track comes from the Hotlands area of the Underground, which players encounter after leaving the Waterfall area right before reaching the mid-way point of the game. "Another Medium" is one of the more musically loaded tracks, with the restatement of the *Underground Ostinato* from "Ruins" and "Waterfall," while also introducing three new leitmotivs. The leitmotivs *Hotlands Lvl. 1* (Fig. 1.4.1), *Hotlands Lvl. 2* (Fig. 1.4.2), and *Hotlands Lvl. 3* (Fig. 1.4.3) all highlight separate areas of the Hotlands the player discovers while exploring. The beginning bass motion makes it feel as though the player is walking through the smoke and gas of the lava below them. The inventive use of percussion and eight-bit sounds helps to create melodies that sound electro-magnetic or robotic, reflecting images that the player sees while exploring the area. These leitmotivs are also present in other tracks that play in the Hotlands area, the most notable being the track “CORE.”

While “Another Medium” and “CORE” share similarities, it is also interesting to note the key difference between these two tracks. “Another Medium” is arranged in the key of F minor, while “CORE” is arranged in the key of C[#] minor, making their keys an augmented 5th (or diminish 4th) interval from each other. Since these two are related by their use as environmental tracks for the Hotlands, one might think that they would at least share a key or possible a relative or parallel key relation. However, this use of

the augmented 5th interval symbolizes the change in level of Hotlands the player experiences when each track is played. “Another Medium” is heard during the portions of the Hotlands before encountering the hotel, while “CORE” is heard much deeper into the Hotlands, before the player fights Mettaton and continues to the long elevator.

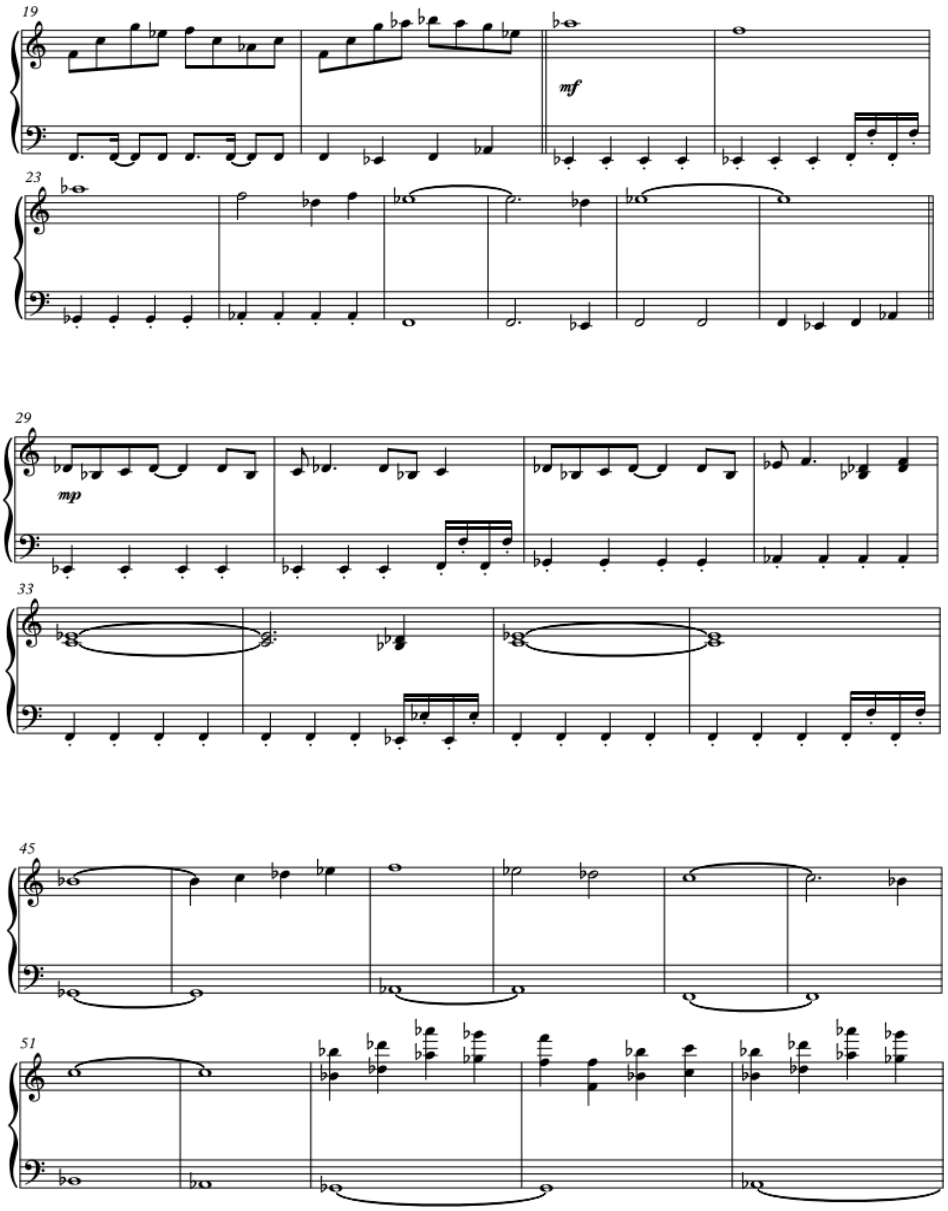

Figure 1. 4.1 -1. 4.3 "Another Medium," mm. 19-28, 29-36, 45-55

Some tracks are composed to represent small-scale areas of the Underground, such as "Snowy" and "Snowdin Town" for the home of characters like Sans and Papyrus. Similarly, the track "Here We Are" is heard while the player travels through an area called the “True Lab,” which is not available in the Genocide route. The tracks "Snowy"and "Snowdin Town" are associated with the Snowdin area, located between the Ruinsand the Waterfall areas.

Through the use of the piano, strings, and piccolo, "Snowy" (Fig. 1.5) complements the winter landscape in timbre and overall sound quality. The track features a simple piano bassline and a repetitive melody that switches from solo piano to a duet between the strings and piccolo, all in the key of B minor. The melody is a simple motive featuring a slight give-and-pull effect, with dotted half-notes at the start and end and eighth notes and quarter notes in the middle. This ten-measure phrase is the next leitmotiv that will be seen again later in the game, appropriately named *Cheerful Tune*. The work's high registration reflects the chilly atmosphere of Snowdin Forest, while the staccato articulations in the piano part evoke imagery of gently falling snowflakes. "Snowdin Town" and "Shop" are introduced when players reach Snowdin Town, located within the Snowdin area of the Underground. Both tracks use the *Cheerful Tune* leitmotiv for the introduction melody, are composed in different tempos, and also present a new leitmotiv, *Snowy Bridge*. These two leitmotivs make a few reappearances later in the game progression, including tracks that will be analyzed in later chapters.

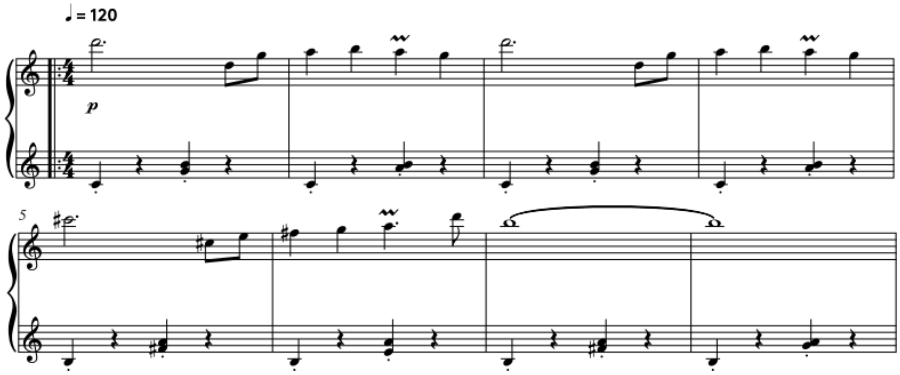

Figure 1. 5 "Snowy," mm. 1-8

Musical Cues

Video games are computational systems, created from sets of procedures in the form of code that is then executed by a program through some kind of operating system, which then manifests as characteristics in the virtual world. Julianne Grasso studies video game music as sets of codes and procedures, where the interactive interface of the gaming world is comprised of if-then statements.[21] If a player interacts with a certain character in the game, the game will then execute lines of code that are specific to that interaction or event. Music is also a procedure of executed if-then statements, where measures resemble lines of code that must be executed in the order they are presented. Since games and the music they contain are based on and controlled by these interactions and the completion of specific triggers, these triggers, or cues, are needed for any progression. This section will focus on defining the different types of musical cues and sound objects used to categorize the different tracks analyzed. The terms used come from studies and research published by Michiel Kamp,

[21] Grasso, "Video Game Music," 20.

Julianne Grasso, and Axel Stockburger, with Kamp and Grasso focusing on musical terminology and Stockburger providing more technical-based terms.

When describing music and sound cues used in media, such as film and television productions, the term diegetic is often used to describe things like ringing bells and doors closing as coming from within the narrative world. In the article, "Musical Ecologies in Video Games," Michiel Kamp compares how diegetic, non-diegetic, and ambient sounds are used in James Gibson's ecological approach to psychology.[22] In this argument, organisms do not need to decode or process complicated information from the outside world to form a “correct” response.[23] An organism’s sensory system resonates with their environment and functions as a mutual "tuning," meaning that the environment shapes organisms to perceive and react to it in certain ways. For example, field mice who have created a burrow in a field and have created a relationship with the field learn that certain sounds signify different events are taking place. Predators walking creates vibrations, and these vibrations create sound, and in turn, mice can interpret this sound to mean whether it signifies something “good” or “bad.”

With regard to the music of *Undertale*, each track can be categorized as being either a diegetic sound, non-diegetic sound, or ambient sound. Diegetic music or sound can be found from a source within the actual environment, non-diegetic music or sounds do not have a clear source but do change based on player interaction, and ambient music or sounds enhance the environment without having an originating

[22] Michiel Kamp, “Musical Ecologies in Video Games,” *Philosophy and Technology* 27/2 (2014): 235–49.
[23] J. J. Gibson, *The Senses Considered as Perceptual Systems* (Boston: Houghton Mifflin, 1966).

source. Examples of each category include "Memory" for diegetic, "Mysterious Place" and "Don't Give Up" for non-diegetic, and "Ruins" and "Waterfall" for ambient. These terms will be used as a tool for the overall categorization of the tracks, along with a second set of terms that are determined by their in-game occurrence.

The second set of categorizations comes from Grasso's dissertation "Video Game Music, Meaning, and the Possibilities of Play," in which she explores music mediated by gameplay.[24] Grasso examines how musical meaning is influenced by experience, embodiment, and subjectivity in which music is utilized in the actual gameplay. She includes a reference to Kamp's analytical example of how music can shape perceived affordances of the video game environment at hand but does not discuss the player's particular relationship to the environment. Grasso establishes four different trigger-based musical cues; location, event, task, and outside of gameplay.

Location-triggered cues occur when players enter or exit different locational boundaries in the gaming world. Examples include "Ruins," "Waterfall," and "Another Medium." Event-triggered cues occur when players intentionally start an in-game event, such as a monster encounter or fight. Examples include "Enemy Approaching" and "Pathetic House." Task-triggered cues are most clearly associated with something the player has to do to proceed to later steps in the game. Tracks like "Live Report" and "Death Report" are a few examples of this cue type. Lastly, outside gameplay cues involve music that occurs outside of gameplay, including music that plays during

[24] Grasso, "Video Game Music," 25-30.

pausing, start, and character selection screens. "Start Menu" and "Menu (Full)" are the only examples of this type of cue in the *Undertale* soundtrack.

Another categorizing system that labels music and sounds determined by their in-game occurrence comes from Axel Stockburger, who presented his paper, "The Game Environment from an Auditive Perspective," at the Level Up, Digital Games Research Conference in 2003.[25] Stockburger presents the concept of spatial practice (relating to or occupying space) as a possible perspective for the understanding of computers and video games. These specific terms are different from Grasso's in that they focus specifically on how video games and computers deploy sound. The classification terms are known as sound objects and are divided into five different types; speech, effect, zone, score, and interface.

Speech sound objects are often sounds used as an element of the diegetic system as recorded or spoken speech, such as language or sound created by movement. While *Undertale* features no music tracks that can be categorized this way, this type of sound object is used in soundbites. Sound-bites are short audio sounds that accompany text boxes used by characters in games in which spoken language is not used. Effect sound objects are sounds linked to visual objects or events. This is similar to event-triggered music cues, but also includes sounds made by the player via the avatar. Zone sound objects are sounds tied to locations in the game environment, similar to location-triggered music cues. Scores sound objects are sounds that belong to non-diegetic

[25] Axel Stockburger, “The Game Environment from an Audiative Perspective,” presented at Level Up, Digital Games Research Conference (Utrecht University, NL, November 4-6, 2003).

sounds, and are often used to mask transitions or veil load times. "Long Elevator" is a great example of this type of sound object. Finally, Interface sound objects share the most qualities with effect sound objects; however, these sounds do not have a source from within the game environment, similar to outside gameplay cues.

Player Interaction

The previous sections of this paper have focused on traditional applications of music theory analysis, connecting in-game characteristics to analysis-based compositional techniques that can be marked on a score. While I will continue to include this type of analysis in later chapters, it is also vital to note the effect this music creates on a performative aspect. Carolyn Abbate published an essay in which she argues for a "drastic" rather than "gnostic" conception of music. Abbate proposes that actual live performances should become an object of absorption, instead of just relying on the compositional work itself.[26] In her article, “Ludomusicology and the New Drastic,” Isabella Van Elferen proposes that the study of game music not only presents new research themes but also has the potential to inspire a major disciplinary reform.[27] Van Elferen’s article serves as a response to Abbate’s essay, focused on game-specific analysis. Inspired by this idea of analysis, this section will study musical tracks as a performance event, not limited by the strict confines of the compositional work.

[26] Carolyn Abbate, “Music—Drastic or Gnostic?” *Critical Inquiry* 30/3 (2004): 505–36.
[27] Isabella Van Elferen, “Ludomusicology and the New Drastic,” *Journal of Sound and Music in Games* 1/1 (2020): 103–112.

Through this technique, music becomes more playful, immediate, and interactive, with its sounds directly influencing the perception of the gaming experience.

When it comes to tracks that are reliant on the player's interaction in the form of a performance, "Run!" and "Bird That Carries You Over A Disproportionately Small Gap" are immediately applicable within *Undertale*. "Run!" is a short, repetitive track heard when players are being chased by Undyne while traversing the Waterfall area.
The quick tempo is paired with a fast and simple melody so players can better focus on avoiding Undyne's attacks. The act of trying to escape a dangerous and life-threatening situation is easily showcased in the track, reminiscent of high-speed chase music one would hear in film or television shows. "Bird That Carries You Over A Disproportionately Small Gap" is another example of examining music based more on its performance rather than its composition. This track is heard during a secondary task that players can complete to explore more of the Waterfall. This short and simple track occurs when players encounter a small, yellow bird that can carry players over a disproportionately small gap in Waterfall. At first, it is unbelievable that such a small bird can handle the weight of a human child. The scene is reminiscent of the training montage in the film *Rocky*.

Similar examples include tracks "Unnecessary Tension" and "Enemy Approaching," which occur when players encounter random monsters throughout the Underground. With similar characteristics as the previous tracks (simple melodies and faster tempos), these tracks stimulate player interaction through the action of battling

the monsters. With the high number of monsters that players encounter during their playthroughs, the tracks become more associated with these encounters.

How do these tracks directly affect individual player interaction with the game? One way is through player immersion and engagement, while another is through the outcome created by those playing and hearing the music. While music certainly contributes to player interaction, the music, and even sounds, in video games are completely dependent on player interaction with the game. In his thesis, "Sonic Rhetoric and Meaning Making in Video Game Sound Design," Adam DeRoss illustrates how game sounds (or a lack thereof) can function as symbolism and metaphor to help players express themselves through interactivity and support the medium's other narrative elements.[28] This awareness of music functioning on multiple layers of gameplay has significant impact on the player's understanding of the different types of games they engage with. In *Undertale*, music is often used as a medium to encourage player interaction and decision making.

One musical interpretation of symbolism and metaphor heard in video game music can be seen in the overall tone of a piece or track. Matthew Arndt published an article in the *Journal of Music Theory* that discusses and compares Schenker's and Schoenberg's perception of tone as a living idea of music. Arndt discusses the conception of the tone as a partly unconsciously perceived, living idea, which composers then imitate in a piece of music as a manifestation or development of one particular

[28] Adam DeRoss, "Sonic Rhetoric and Meaning Making in Video Game Sound Design" (Master's thesis, Nova Southeastern University, 2020).

tone through the key.[29] One could combine this idea of the tone being a living characteristic that is manifested in music, and consider the impact on player immersion and engagement. By applying this concept to a single attribute of a piece (the key, for example), a complete analysis can be made whereby certain tracks evoke a certain emotion.

Numerous tracks are meant to evoke certain emotions based on the situation or event in which they are heard. Tracks like "Burn in Despair!," "His Theme," and "Reunited" achieve specific emotions for players. "Burn in Despair!" and "His Theme," both non-diegetic, event-triggered cues and interface sound objects, are played during the last boss fight of the Pacifist and Neutral routes. By this point, players know that Flowey is the reincarnation of Asriel, and both tracks are symbolic representations of Asriel's internal conflict between “good” and “evil.” "Burn in Despair!" is a quicker, action-oriented remix of "You Idiot." This track plays during the second phase of the boss fight with Asriel at the end of the True Pacifist Route. "His Theme" plays during the final part of the fight with Asriel, starting as soon as Asriel has a flashback of when he found the First Human. This solemn, emotional song is an orchestrated version of "Memory.” "Reunited" is another non-diegetic, event-triggered cue and interface sound object that plays during the epilogue at the end of the Pacifist route. Here, players find themselves back at the big door from the start of the game, with Toriel, Sans, Papyrus, and the other main character monsters surrounding them, asking them to wake up. All

[29] Matthew Arndt, “Schenker and Schoenberg on the Will of the Tone,” *Journal of Music Theory* 55/1 (2011): 89–146.

the tracks analyzed and discussed in this chapter are integral to establishing the worldbuilding of *Undertale*, and have a major impact on player immersion.

Chapter 2: "It's Showtime"

Once the game's environments are generated, it is time to consider the stories and narratives for the game's player, and also for the range of non-player characters (NPCs) encountered during play through. From minute references to full-blown character arcs, having an established storyline and narrative for characters in the gaming world is crucial to player immersion. These individual character narratives also provide context relating to the overarching storyline of the gaming world they exist in, through dialogue with the characters themselves, and through music and sounds associated with them. Different game developers implement these story arcs or narratives in a wide variety of ways, ranging from narrating in either the third or first person to using music and sound as objects or clues. This presentation of a written (on-screen dialogue) or vocally expressed story narrative in the form of music is not limited to video games or digital media. Classically-trained composers like Johannes Brahms and Ralph Vaughan Williams composed ballads and orchestral pieces from the text of poems. For instance, Johannes Brahms's Ballade, Op. 10, No. 1 was based on the folk poem "Edward, Edward," and has sparked many to create individual interpretations of the piece.[30] Music in video games often serves a similar function, crafting the narrative through a procession of musical cues linked to various locations, character engagements, and actions.

[30] Charise Hastings, "From Poem to Performance: Brahms's 'Edward' Ballade, Op. 10, No. 1," *College Music Symposium* 48 (2008): 83–97.

The Stories They Tell

Characteristics of an effective story narrative include attributes like character, settings, conflict, plot, and theme. These traits are universal and can be applied to both written and audial media. When it comes to the creative process of the character arcs of the monsters from the Underground, Toby Fox stated in an interview that "I like to think that I have subconsciously based them off of people I know, but to be fair, I mostly molded them around the game itself."[31] Fox is also on record stating that the music is composed before the gaming environment was developed, meaning that all of the character's stories are based on the music, rather than the music composed in response to characters. The music of *Undertale* is a mixture of "retro" and synthesized acoustic sounds, with heavy influences of "chiptune" sound aesthetics. "Chiptune" refers to music composed for the microchip-based audio hardware of early home computers and game consoles. A 2021 Master's thesis by Andrés José Almirall Nieves from Florida State University writes about Fox's deliberate decision to emulate the sounds of early video games in *Undertale*.[32] He states that the soundscape of these genres reflects the visual aspect of *Undertale*, which is heavily modeled on early role-playing games. *Undertale* is a 2-D game that employs a top-down perspective and relies on pixel-based environments and character designs. Almirall Nieves also comments on how immersive *Undertale* is compared to other 2-D role-playing games. In this world, every character

[31] Chris Isaac, "Interview: *Undertale* Game Creator Toby Fox," The Mary Sue, last modified Dec. 10, 2015, https://www.themarysue.com/interview-undertale-game-creator-toby-fox/.
[32] Andrés José Almirall Nieves, "It's More Than a Game, It's an Experience: Eudaimonic Storytelling in the Music of Art Games" (Master's thesis, Florida State University, 2021).

and "enemy" has a personality and a story, and the player is responsible for how invested in those stories they wish to be.

Before continuing into the analysis of the narrative-focused tracks, let us clarify the techniques by which the tracks will be examined and analyzed. The techniques and tools I will employ focus on traditional narrative elements that influence player immersion. In his dissertation "Creating a Coherent Score: The Music of Single-Player Fantasy Computer Role-Playing Games," James Sebastian Tate explores the music used in Computer Role-Playing Games (CRPGs).[33] Tate focuses on the narrative characteristics of genre fiction, concentrating on fantasy fiction, discussing the ways composers incorporate the variety of musical material used, focusing on the narrative implications of video game music. The expressive nature of this genre allows composers to incorporate multiple styles and instrumentations into these tracks while still being part of the collective soundtrack and storyline.

The character Flowey/Asriel Dreemurr is an appropriate case study for this method of analysis. The associated tracks for this character, in gameplay order, include "Your Best Friend," "Your Best Nightmare," "Finale," "Hopes & Dreams," and "SAVE the World." All five tracks feature elements of rock-style music, with the last three having a heavy rock-and-roll influence. The first two are complete opposites of each other, with "Your Best Friend" being a sweet, innocent-sounding piece with a simple melody over an Alberti-style bassline, all in the key of A[b] major (Fig. 2.1). This is a non-diegetic, event-

[33] James Sebastian Tate, "Creating a Coherent Score: The Music of Single-Player Fantasy Computer Role-Playing Games" (PhD diss., Durham University, 2021).

triggered effect sound object that plays during the player's first interaction with the character, Flowey the Flower, and includes *the Good Flowey* leitmotiv. In this scene, players learn basic game controls from Flowey, through an imitation “monster encounter,” simulated by Flowey. Flowey then shows players how to “fight” during these monster encounters, instructing them on how to avoid attacks and the different ways to respond. Based on the track and Flowey's actions, players would assume that Flowey is a helpful monster who holds no ill will and wants to help; however, this does not last long.

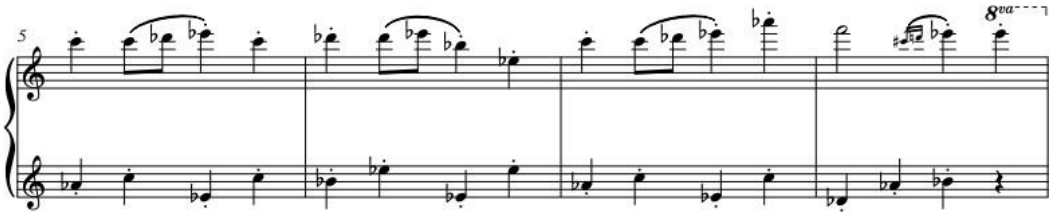

Figure 2. 1 “Your Best Friend,” mm. 5-8

Shortly after instructing the player to purposefully damage themselves (resulting in lowering their overall health), which the player either does, or disobeys, Flowey's personality takes a dramatic turn. Coinciding with this change in attitude is a corresponding shift in key from A[b] major to G major in the track "Your Best Friend." The descending modulation signifies Flowey's breaking façade, informing the player of his true, less-than-friendly intentions. This track is paired with "Your Best Nightmare" (Fig. 2.2), which occurs during the player's final battle with Flowey following the Pacifist and Neutral routes. The track presents the new *Bad Flowey* leitmotiv, which is then played alongside the *Good Flowey* leitmotiv.

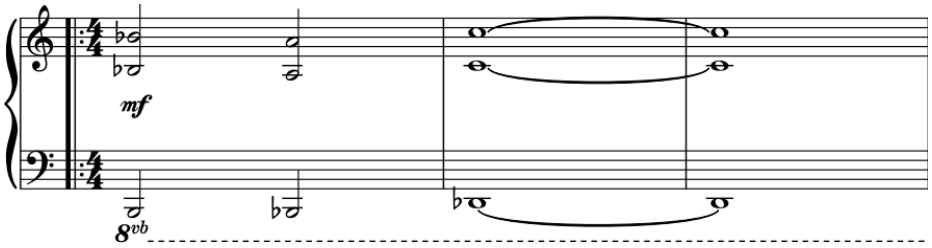

Figure 2. 2 "Your Best Nightmare," mm. 1-2

The purpose of this duet between the *Bad Flowey* and *Good Flowey* themes is to highlight and hint at the internal conflict between Flowey (the evil monster) and the human souls he absorbed to gain this power (the good children's souls). The *Good Flowey* leitmotiv fights against the *Bad Flowey* leitmotiv, with the two switching multiple times in the composition, symbolic of Flowey fighting against the good he has within himself, in the form of the human souls that are attempting to help the player in their battle. After defeating Flowey, and with more in-game progression, it is revealed in the final boss fight of the Pacifist and Neutral routes that Flowey was a reincarnation of Asriel Dreemurr, the dead son of the King and Queen. Here, "Hopes and Dreams" and "SAVE the World" are associated with Asriel, which both feature references and imitations of familiar leitmotivs, like the *Undertale Theme*, *Good Flowey, Bad Flowey*, and the secondary melody from "Once Upon a Time." Just as with "Your Best Nightmare," both the *Good Flowey* and *Bad Flowey* motives are heard in conflict with one another, while the other two melodic themes are used to establish Asriel within the original story of the Underground. By the end of the battle, the souls within Asriel help him to come out of this malicious state, which was ultimately the personification of the hatred he encountered before he died.

Another character narrative that is best explained through this method of analysis is Papyrus, the resident Royal Guard member and puzzle master from Snowdin town. Papyrus has two tracks, "Nyeh Heh Heh!" and "Bonetrousle," where the *Papyrus Theme* leitmotiv is heard after the five-measure introduction. "Bonetrousle" is the main track for this character, with "Nyeh Heh Heh!" being a slight reduction of the much longer composition. “Bonetrousle” is a non-diegetic, event-triggered effect sound object that features eight-bit synthesizers, a quick tempo, and a simple melody that complements Papyrus’s strict yet childlike personality. Papyrus is typically perceived as a naïve character and is often infantilized by many in the *Undertale* community, based on his love of child stories and desire for friends.[34] While "Bonetrousle" (Fig. 2.3) does highlight his more innocent nature in the simplicity of the melody, a certain complexity is hidden within the same melodic figure, in the form of grace notes, trills, and chromatic notes. The piece continues this presentation of a more complex character narrative through the use of variation and the development of the main theme. The *Papyrus Theme* is first established in mm. 5-12, then becomes developed, adding more instances of grace notes, trills, and chromatic notes at different pitch levels. Players can explore more of Papyrus' character in the Pacifist and Neutral routes afterward, where more tracks that accompany events with Papyrus occur.

[34] Members of the *Undertale* community will often make videos analyzing characters from the game and provide explanations or reasonings behind aspects of the game that many players might be unfamiliar with. For an example of an analysis video, see: https://www.tiktok.com/@wh_ea_t/video/7184212982631812398?lang=en.

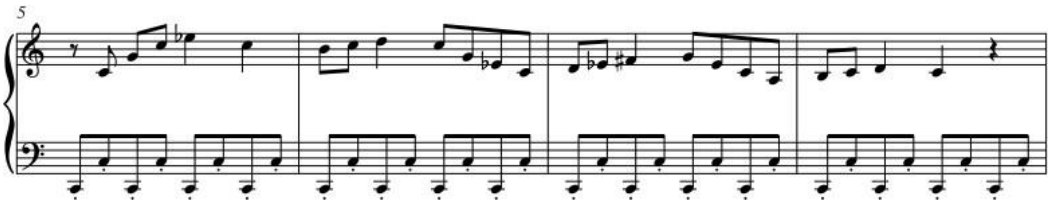

Figure 2. 3 “Bonetrousle,” mm. 5-8

More character-centric tracks occur, associated with other main character monsters that players encounter and befriend during their play-through. A few of these include Sans, with his track "Sans," Undyne, whose tracks include "Undyne" and "Spear of Justice," and Alphys, with her track "Alphys.” "Sans" is fourteen measures long, played in the key of A[b] major, and features a simple and repetitive bassline, with lots of off-beat emphases and a jazzy melody that fits Sans' laid-back and joking personality. "Undyne" is twelve measures long, arranged in the key of B[b] minor, and features a repetitive bassline with a melody line that changes every four measures. The bassline, while simple and repetitive, is very haunting and threatening, which pairs nicely with a melodic line to audibly represent Undyne's personality. The track features a march-like tempo and uses a combination of piano, strings, timpani, and percussion to give it a sinister quality. "Alphys" is an upbeat piece, featuring a majority of staccato rhythms in the key of F major. Alphys is a stereotypical nerd archetype, both shy and awkward. The track reveals information about Alphys' character and personality, and uses short rhythms with lots of staccato accents, highlighting her shy nature while also showing her awkward chattiness. Each of these tracks also includes a short leitmotiv for each character that is later incorporated into other tracks associated with each character.

Communicating with Sounds, Not Words

The application of sounds and music in *Undertale* is influential to player immersion and engagement through acting as an extension of the character, environment, or situation the track is connected with. Environmental tracks, for example, help to create an appropriate mood or atmosphere in the in-game area, often through musical techniques that emulate characteristics that are familiar to the player. The communicative aspect of these tracks is not solely generated from the tracks themselves, but from associations that each player makes based on their individual experiences. The generated result or player response is, in a sense, manipulated by the communicative action of hearing the track. From "Once Upon a Time" to "Good Night," each track is meant to elicit a specific emotional response from the player. This approach of music acting as a means of manipulative communication is studied in an article published in the *International Review of the Aesthetics and Sociology of Music* by Dr. Barry Ross of the University of Stellenbosch. The article, "The Causal-Manipulative Approach to Musical Meaning," uses the causal-manipulative approach as a means of distinction between meaning as a property of communicative acts, and meaning as a social value of significance.[35] This model of communication is proposed where content is located not in the musical utterance itself, but rather in the minds of conspecifics in the form of propositional and non-propositional mental states.

[35] Barry Ross, "The Causal-Manipulative Approach to Musical Meaning," *International Review of the Aesthetics and Sociology of Music* 48 (2017): 3–17.

In his research, Ross explains that the musical content being heard is operating as a communicative act represented in the mind. This representation is not heard in actual words or used as a transfer of information but is processed mentally because communicative acts have causal properties that result in a formation of content in the listener's mind. For example, consider that a performer is performing a piece and wants the listener to feel or think the music is "sad." This "sadness" is a mental state that the performer wants the listener to create as a result of this communicative act. This can be achieved through different musical techniques such as using a minor key, having a slow tempo, and other dramatic musical characteristics. How did this work? The performer used a non-semantic sound and the causal properties created a mental state for the listener to then mentally create. The causal-manipulative approach is "manipulative" in that it takes communication to be a means of manipulation, and "causal" because it is the causal properties of the acoustic signal. Rather than some type of "content" embodied by the musical utterance, this results in a change in a content-rich mental state.[36]

This relationship between the music as a "manipulative" form of communication and the resulting player interpretation of the music is one of the primary ways that meaning occurs in *Undertale*. The most prominent example of this occurs in the music associated with the character Mettaton. Mettaton is a strange robot, with the personality of a psychopathic game show host with borderline personality disorder, which was the result of Alphys experimenting with monster souls. This character is, by

[36] Ross, "The Causal-Manipulative Approach," 14-15.

far, the most fascinating character players encounter during the game and features the most musical tracks associated with a single character. Of the complete soundtrack, ten separate tracks are associated and used for Mettaton during his many character encounters. The two main tracks used for Mettaton are "It's Showtime" and "Metal Crusher," which the players hear when they first meet Mettaton in Alphys' lab.

"It's Showtime" (Fig. 2.4) is a short, fast-paced, and energetic piece, resembling the style of music one would hear in the background of gameshows like *The Price is Right* or *Family Feud*. The piece is a total of seventeen measures long, arranged in the key of C major, with a few uses of the chromatic pitches of A[b], C[#], with one notable F[#], and is comprised of two sections. The *Showtime Theme*, heard in mms. 1-4, is meant to highlight Mettaton's television star/host personality. Along with this side of his personality, players hear the tracks "Live Report" and "Death Report," which play during separate television skits accompanied by puzzles that players must solve. These instances of the *Showtime Theme* function as a means of communication between the game and Mettaton himself. Instead of these being player-triggered cues or sound objects, the tracks can be interpreted as being controlled by Mettaton, communicating that he is in control of the progression of the story. Between these occurrences of the *Showtime Theme*, players also experience cases of his more, monstrous personality. "Metal Crusher" is the track for Mettaton's “monster encounter” moments, or, simply the moments where the monster encounter window will appear. "Metal Crusher" functions to Mettaton as “Nyeh Heh Heh!” does to Papyrus. "Metal Crusher" (Fig. 2.5) features the use of the raised seventh from the harmonic minor and also a chromatic

pitch in the melody. The *Crusher Theme* highlights Mettaton's change from an entertainer to a genocidal robot, with the task of killing any human.

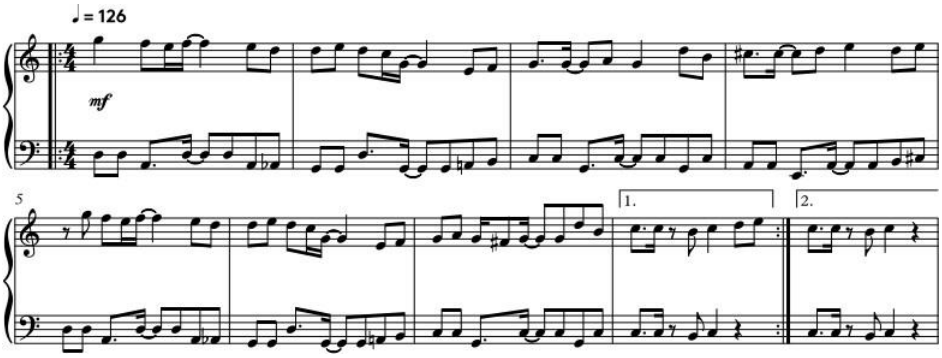

Figure 2. 4 "It's Showtime," mm. 1-8

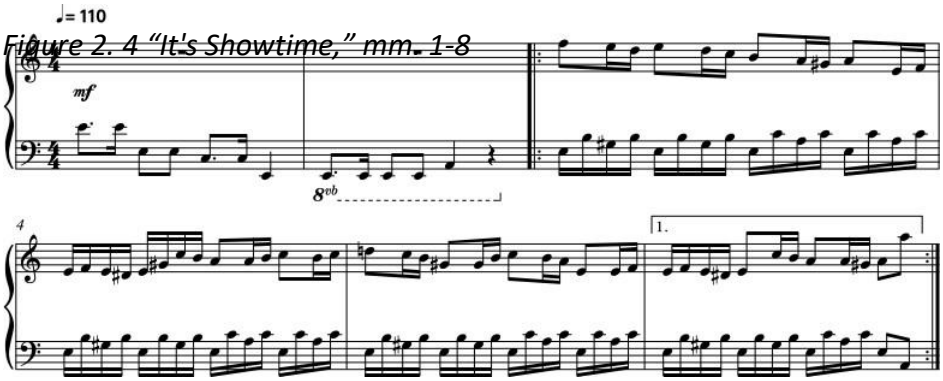

Figure 2. 4 "It's Showtime," mm. 1-8

Figure 2. 5 "Metal Crusher," mm. 3-7

The two themes of Mettaton communicate two separate sides of his character, the entertaining and genocidal robot, yet both sides of his personality appear to coexist together. One may thus compare Mettaton to Flowey, with both of them having a dual personality trait of "good" and "evil." In Flowey's case, this is a source of conflict for the character. In the case of Mettaton, these dual personalities exist within the robot without any major conflicts. The combination of Mettaton's dual personalities comes to a head in the track "Death by Glamour" (Fig. 2.6), which acts as his battle track in the Pacifist and Neutral routes. This track, played in the key of E minor/E Phrygian, is a

funky, dance-style piece with hints of several leitmotivs, including *Hotlands Lvl. 1*, *Hotlands Lvl. 2*, *Showtime Theme*, and *Crusher Theme*.

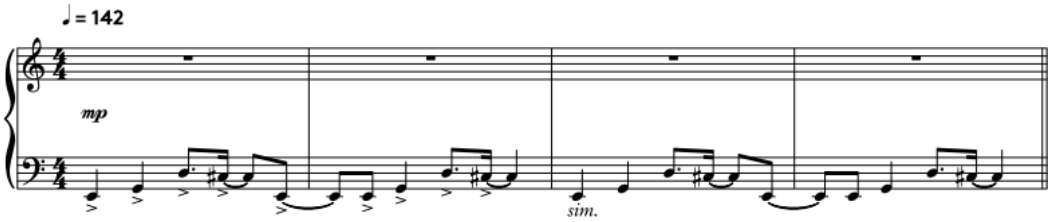

Figure 2. 6 "Death by Glamour," mm. 1-4

Mettaton sees this battle as a performance in which he is the lead performer, which further solidifies Mettaton's perceived control over the storyline and the player's progression. The manipulative communication of the tracks is controlled by the character, which differs greatly from how the other character themes have occurred. In this case, Mettaton uses the tracks to communicate this story in the form of a performative show. The idea of narrative meaning being expressed in the form of a performance resonates with Abbate's ideas in "Music—Drastic or Gnostic?," referenced in chapter 1.

These instances of musical interpretation as a means of communicative storytelling are utilized in many of the tracks heard in *Undertale*, including the tracks that players encounter during the Genocide route. A few tracks players encounter in this route include "MEGALOVANIA" and "Heartache," used for the characters Sans and Toriel, respectively. "MEGALOVANIA" occurs only in the Genocide route, while "Heartache" is used in all routes; however, the connotation for the track in the Genocide route is vastly different from how it operates in other routes.

“Heartache” (Fig. 2.7) is unique in several ways. First, the presentation of melodicmotives is in a theme and variations style, with the theme presented in mm. 9, followed by several variations throughout the piece. Second, the key of the piece is B[b] minor, a semi-tone difference from “Home.” This semi-tone relationship is similar to "Your Best Friend,” which featured a descending modulation from A[b] to G after Flowey reveals histrue nature. In the case of “Heartache,” the modulation is ascending, signalling the fact that to continue progressing, players must eventually confront Toriel. Whether or not this was intentional by Toby Fox, the complexity of this track complements the puzzling nature of the confrontation with Toriel. Toriel shows her kindness to the player, giving them food and shelter, but, at the same time, also shows violence to keep the player from progressing. By initiating the fight with the player, she is not trying to convince them to stay; she is trying to convince herself that sometimes, violence might be the answer. In the context of the Genocide route, players experience more emotional turmoil, knowing that Toriel only wants to help the player as she tried with the other children.

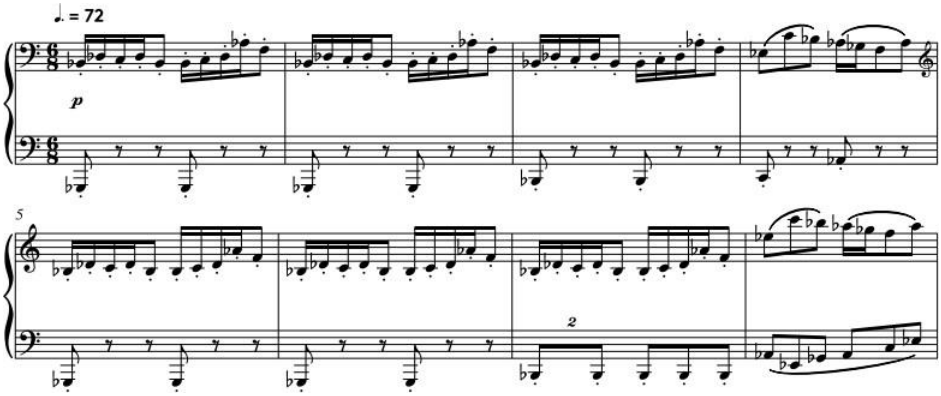

Figure 2. 7 “Heartache,” mm. 1-8

"MEGALOVANIA" (Fig. 2.8), played in the key of D minor, is one of the longer tracks of the soundtrack, which is appropriate, given how difficult and long the fight with Sans can be for many players. The leitmotiv used to signify battle with Sans is the *Megalovania Theme*, first introduced in mm. 1-2 in the form of a short, eighth-note pattern rhythm, which is then repeated throughout the track. The use of staccato markings is also significant in establishing the atmosphere and emotion of the piece. Sans has determined that the player must be killed and plans to waste no time in doing so. This piece is in a heavy rock genre, heard in both instrumentation and use of a Blues-scale melodic pattern. Close to the middle of the track a slightly variated version of the *Undertale Theme* occurs.

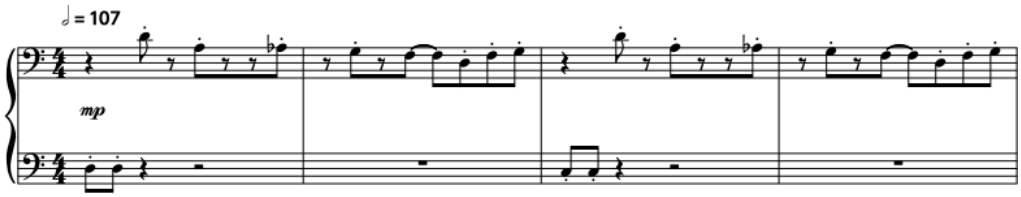

Figure 2. 8 "MEGALOVANIA," mm. 1-4

It is interesting to compare the contradictory meanings behind the *Undertale Theme* leitmotiv and its presence in this track. The *Undertale Theme* leitmotiv symbolizes the ideas of home and safety, while "MEGALOVANIA" symbolizes genocidal thoughts and actions and the consequences of those actions. It is as if this inclusion of the *Undertale Theme* leitmotiv is telling players that they could have gotten the "better" ending by choosing peace instead of violence. If players are successful in getting to this point in the Genocide route, "MEGALOVANIA" can be interpreted as a sort of "reward" for the emotional turmoil they endured. The success of this track comes from the

players being able to be manipulated into completing a task that would originally be against their morals. The reward of going against their moral compass is getting to hear more tracks and experiencing a more complete interpretation of the characters' stories. The relationship between this musical manipulation and player morality is examined in the next chapter.

Chapter 3: "The Choice"

This thesis has thus far explored and analyzed the more traditional aspects of the development and production of *Undertale*. All developers, from indie to triple-A titles, must start the process of building the world and creating a story. This chapter will explore a concept of gameplay not normally employed – morality. The interaction and application of player choice and the moral consequences of those choices is a unique and creative concept to increase player immersion in the game's actual gaming environment. As a CRPG, *Undertale* naturally requires players to take on the role of the game character more deeply, which is then shaped by the gaming world. Referencing back to the 2020 article, "Worldbuilding Components and Transmedial Extensions of Computer Role-Playing Games,"[37] worldbuilding in games includes more than just the mechanical aspects. Characteristics such as culture, region, language, and music are all taken into consideration when creating the immersive gaming environment.

Morality and Player Choice

According to *The Stanford Encyclopedia of Philosophy*, there are two distinct, broad senses of morality: a descriptive sense and a normative sense. Descriptively, this refers to certain codes of conduct put forward by a society or a group (such as a religion) or accepted by an individual for their behavior. Normatively, this refers to a code of

[37] Bostan, Tınlı̇, and Çatak, "Worldbuilding Components," 281.

conduct that, given specified conditions, would be put forward by all rational people.[38] These aspects of morality will inform the subsequent discussion of morality, and its critical role in *Undertale*, in this chapter.

Generally, the treatment of morality and moral consequences are reliant on the individual player's moral compass where choices need to be made by creating situations where the player is given two choices. However, these moral dilemmas usually do not directly influence the final outcome of a game or have little effect on the overall game progression. In *Grand Theft Auto*, for example, players are given the freedom to do and act as they please, even when completing storyline objectives. This can be seen in a player's ability to commit crimes that are not rational and against descriptive and normative ideas of morality. Of course, this is not a commonality in the gaming world, but the argument can be made that many games only imply a surface-level application of some moral thought. It is often through virtual gaming that players are given the freedom to partake in playful experimentation, taboo-breaking, and maximizing outcomes in terms of engagement. What makes *Undertale*'s application of morality unique are the distinct outcomes players achieve based on those moral choices. *Undertale* both rewards and punishes the players based on their choices and overall moral compass. Every choice made by the player is controlled by the player; there is no devil or angel on their shoulder telling them how to progress through the game.

[38] Bernard Gert and Joshua Gert, "The Definition of Morality," *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, last modified Sept. 8, 2020, https://plato.stanford.edu/entries/morality-definition/.

It was established in previous chapters that *Undertale* has three official endings, the "Pacifist," "Neutral," and "Genocide" endings, with each end having a set of parameters that must be met. The parameters in question are mostly contingent on player choice and on how they chose to interact with characters and NPCs. According to Jere O'Neill Surber in his presentation "Computer Games as a Philosophical Medium," when games provide incentives for players to act in a certain way it creates a moral discourse.[39] In *Undertale*, the game's primary predicate is that the player must choose between being merciful or being violent during the encounters with the monsters of the Underground. Thus, the game features both the path of violence and the path of pacifism. Despite having the complete freedom to choose which route to take, most players understand that the push towards violence serves as a lesson to the consequences of one's actions. However, because the idea of a moral vacuum exists in *Undertale*, there are additional incentives the game creates to influence player choice.

The concept of this "moral vacuum" references a thesis by Dylan Alford, "Learning Good From Skeletons: Ethical Literacies in *Undertale.*"[40] Alford conducted a study in which he examines the discourse around the game *Undertale* and how its community engages with the game and its moral impositions. The discussion of moral vacuums comes from the proposed idea that players often regard video games where playful experimentation, taboo-breaking, or maximizing outcomes are preferred modes

[39] Jere O'Neill Surber, "Computer Games as a Philosophical Medium," presented at The Philosophy of Computer Games (Oslo, 2015).
[40] Dylan Alford, "Learning Good from Skeletons: Ethical Literacies in *Undertale*" (Master's thesis, The University of Oklahoma, 2019), 10.

of engagement. Players are given control of managing and authoring stories and systems where their choices have meaningful ethical consequences. If players are to regard *Undertale* as a moral vacuum and experiment with their moral compass, what is influencing their choices now? I argue that music is used as a way of subtly manipulating players into making “good” choices so that they are rewarded with more musical tracks. There are 101 tracks in the complete soundtrack composed by Toby Fox, some of which have been explored and analyzed in previous chapters. This chapter examines seven tracks that showcase how a player’s moral choices and actions are either rewarded or punished. The tracks will be analyzed in gameplay order to both the Pacifist and Genocide routes, excluding the Neutral route because of its similarities to the Pacifist route.

The first track takes place in the Waterfall area of the Underground, where players find themselves being guided by Sans (who is standing at a random stand) to a local restaurant, Grillby's. After asking how the player is doing, the environment quickly shifts. A single spotlight shines down on Sans and the player, which is preceded by Sans asking the player about “talking flowers,” otherwise known as “echo flowers.” Sans warns the player of their manipulative nature and to be careful when they come across any. It is during this intense moment that players hear the track "Premonition" softly playing in the background. This is a nondiegetic, event-triggered music cue or interface sound object, meaning that the track is triggered by an in-game event and is not recognized as originating from a physical source. "Premonition" (Fig. 3.1) is a short, simple, and repetitive piece, with no melody line, but instead utilizes major seventh

chords to create this mysterious, almost haunting harmony, with an interesting harmonic progression.

By analyzing the score, I determined that the piece is composed in the key of C[#] minor; however, further analysis shows that only a few chords are used from that key. Measures 1-2 and 5-6 show the use of the AM7/G[#] which is then followed by a BM7/A[#] chord in measures 3-4 and a GM7/F[#] chord in measures 7-8. While the chords themselves do not necessarily fit within the context of the key, the chords are connected by their ascending fifth and ascending half-step arpeggiation in the bass. This use of transposing the initial AM7/G[#] both upwards to B and downwards to G is a great example of planing, a compositional technique used by composers such as Ravel and Debussy. The parallel motion created from these chords emphasizes the mysterious and unnerving scene with Sans. There is no specific leitmotiv used in the piece, furthering the idea that this is separate from the established story and is used as a means of reminding players of their moral choices thus far.

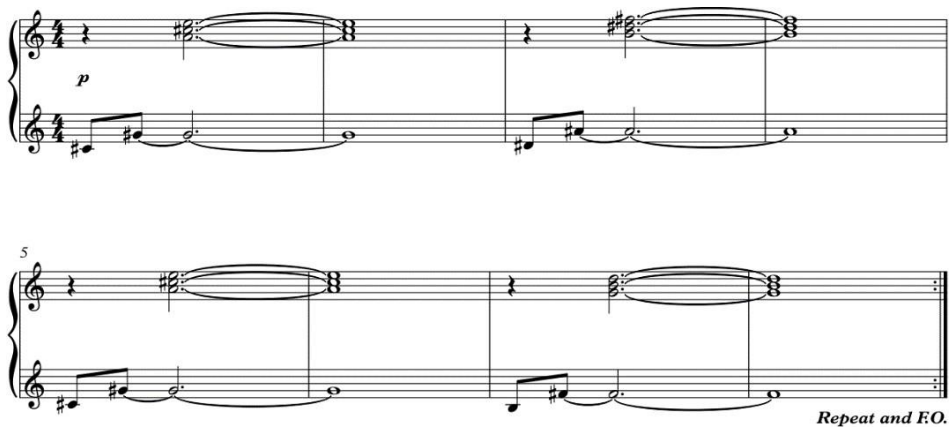

Figure 3. 1 "Premonition," mm. 1-8

The next example of this ambiguous use of music as a reward or punishment for player choices occurs in the track "Memory." After exploring further into the Waterfall and encountering more monsters, players come across a statue under a small opening, making it so that rain falls onto it from above. A basket full of umbrellas can be found just a few feet away, and if players put two-and-two together they can take an umbrella and place it on the statue, protecting it from the rain. After shielding the statue, this triggers a music box within the statue to start playing a song, the song being the track "Memory" (Fig. 3.2). In terms of game progression, the first eight notes of "Memory" is needed for players to complete one of the many puzzles of the Waterfall. The puzzles are a part of the set of parameters for the Pacifist run. The track is heard again when Undyne attempts to kill the protagonist a second time in Waterfall after falling into the sewer system and becoming unconscious. While the protagonist is unconscious, they experience a memory of Asriel meeting the First Human before waking up to find that they have survived yet another fall onto a bed of Golden Flowers.

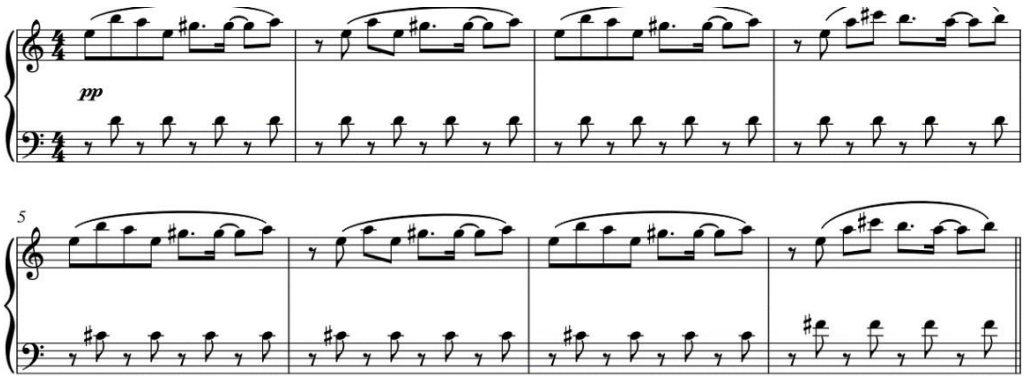

Figure 3. 2 "Memory," mm. 1-8

"Memory" is a sixteen-measure long piece, composed in the key of A major, with a repeating four-measure melody and an alternating set of two four-measure long basslines. The first eight measures are composed in a sentence structure, with mms. 1-4 establishing the melodic motive and mms. 5-6 and 7-8 repeating that motive. While themain melody is repeated every four measures, the harmonic structure follows a different rhythm. Instead of starting with the I chord, and establishing the key, we get a major IV sus2 chord, with the G[#] replacing the F[#]. By removing the 3rd in a chord, the chord becomes neither major nor minor, as the 3rd determines the happy major or sad minor sound. This is followed by two measures of a major I second inversion seventh chord and ends with two measures of a minor vi seventh chord, which then continuously repeats. The use of the IV sus2 chord is a creative and ingenious way to signal a sense of uncertainty around a relatively neutral situation, for this track is not exclusive to just one route. Players can complete the statue task in any of the three routes, while players can see this as a “reward” for completing the task, the track does not have a positive or negative connotation because of the major IV sus2 chord.

When taken out of this context, "Memory" is later associated with the other tracks "Undertale" and "His Theme" through the *Compassion Theme* leitmotiv. The *Compassion Theme* is significant because of its connection to the character Asriel Dreemurr, the son of Asgore and Toriel. Asriel demonstrates having and expressing compassion when he encountered humans from the surface and refused to fight back when being mistaken for killing the first human child. Players learn this from hearing the completed version of the story that was initiated during the introduction credits of the game.

"Memory" is the only track out of the three with the Compassion Theme that is heard outside of the Pacifist route. In the context of morality, its purpose during the statue task is to subtly bring forward the idea of compassion, a “good” moral trait that would then be rewarded later in the game. Having "Memory" play as a reward whenplayers complete the statue task and then hinted in "Undertale" and "His Theme," creates the connotation between good choices and moral rewards.

Upon reaching the mid-way point of the game, players are given the chance to relax before continuing on their journey, it is also where the track "It's Raining Somewhere Else" is introduced. This track is heard when meeting up with Sans outside the hotel when he takes players to a dining room to talk about their experiences so far. For those unaware, the character Sans will be seen appearing periodically and randomly as players explore the Underground. The composition of the track is that of a relaxed and calmer arrangement of the track "sans," with the leitmotiv *Sans Theme* heard in mm. 9-16 before it is used again at different points throughout the piece. It is worth noting that, similar to "Premonition," this track is not available to players during the Genocide route.

"It's Raining Somewhere Else" (Fig. 3.3) is composed in the C Phrygian mode, evident by the lowered second scale degree, and does not feature any unusual harmonies. It begins with an eight-measure progression of Cm7-Gm7-B[b]m7-Fm7, with the harmonies changing every two measures, before the main melody is introduced in measure 9. This harmonic progression repeats for a majority of the remaining track, with the piece ending with the same material from measures 17-24.

The two tracks are also connected by their respective keys, with "Sans" being in the key of A[b] major and "It's Raining Somewhere Else" in the key C Phrygian. These keys are a third away from each other, with C acting as the mediant of A[b]. This showcases the contrast between the two meetings players have with Sans. This track is important to players because of the connotation it has with Sans and his main duty of watching the player progress through the Underground and determine if they are “good” or “bad.” Sans acts as the judge, jury, and executioner of *Undertale* and is in charge of deciding your fate when it comes to Judgment. If players are making “good” choices and get the opportunity to hear this track, it means they are on the right path.

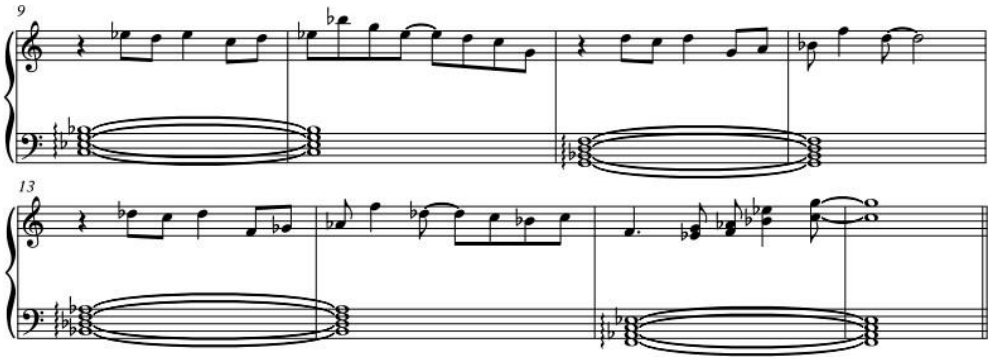

Figure 3. 3 “It's Raining Somewhere Else,” mm. 9-16

Continuing with tracks that are achievable and rewarded to players who complete the Pacifist and Neutral routes, the next is "Last Goodbye" (Fig. 3.4). This track plays during the "Special Thanks" credits scene at the very end of the game where players are encouraged to encounter or hit as many names as they can as they move to and from the screen. "Last Goodbye" is only available during the "Special Thanks" credit

scene and signifies that players have reached the ending and were successful in completing the Pacifist or Neutral routes. The track itself is in the key of B major and is written for piano, percussion, and electronic music instrumentation. "Last Goodbye" is very upbeat and fast-paced, which greatly accompanies the atmosphere of the ending credit scene. The piece ends with an interesting combination of a slow I-V6-I42-vi progression which concludes with a slower [b]III7-ii7-[b]II7 progression. These two progressions create a continuous descending step-wise motion in the bass, starting on the pitch B in m. 73, and descending chromatically to end on the pitch C in m. 81. This slow descent from the tonic to the seventh plays over the very ending of the gameplay, with the player concluding back at Toriel's house.

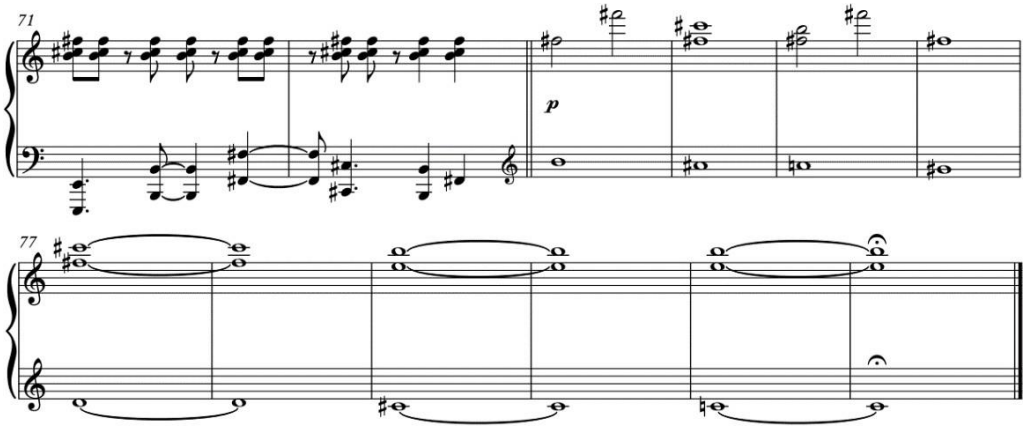

Figure 3. 4 "Last Goodbye," mm. 73-81

Arguably the most significant and impactful track composed by Toby Fox is the appropriately titled "Undertale." "Undertale" is an ambient, event-triggered music cue or interface sound object that is only available for players on the Pacifist and Neutral routes. Players trigger the track when they come across a copy of Toriel's house after fighting Mettaton and before reaching Asgore's castle. As they enter the house, players

find themselves continuously encountering random monsters, where they are told the remainder of the main storyline that was started at the beginning of the game. The track itself is very significant, not only in the storyline of the game but also in the sheer number of musical references and techniques used. The piece is composed in the key of E[b] major, with some instances of E major, and features the *Compassion Theme* and *Undertale Theme* leitmotivs. The use of these leitmotivs connects multiple tracks that players have already heard during their gameplay as a reward for their “good” choices.

The piece begins with the *Compassion Theme* on an acoustic guitar, setting the mood for the scene. The *Compassion Theme* then moves to the bassline as the *Undertale Theme* is introduced as the main melodic motive in m. 13, which is then replaced with several variations until m. 53. As these variations occur, the instrumentation becomes grander, with more instruments being added for subsequent variations. The piece modulates to the key of E major at m. 102, which signals the approaching climax of the story. The song then softly concludes with a reappearance of the *Compassion Theme*, in a quieter dynamic with only a few instruments, all playing the same material. Concerning player progression in the Pacifist or Neutral routes, "Undertale" is arguably the most important reward they can be given. This track signifies to players that all their hard work has paid off, they chose every “good” option, stayed true to their moral compass, and are now rewarded with both the music and the complete story.

“The Choice” (Fig. 3.5) directly follows "Undertale," and is another example of players making morally correct choices. Once players are given the complete story, they

can exit the house and make their way toward Asgore's castle, but before that, they must receive judgment. As previously explained, Sans, a seemingly light-hearted jokester is, in reality, the most serious and dangerous of all the protagonist and antagonist monsters of the story. Sans is the judge, jury, and executioner of the Underground and his job is to judge the player on how merciful they have been throughout the entire game, which determines if they are allowed to continue to Asgore. In the Pacifist and Neutral routes, Sans congratulates the player on never harming anyone, having tenderness in their hearts, and striving to do the right thing. While he talks, the track "The Choice" is heard playing in the background.

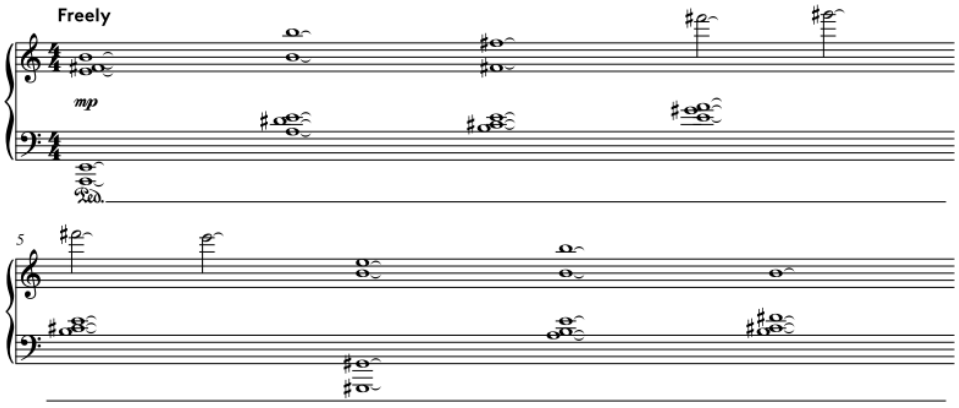

Figure 3. 5 "The Choice

The striking aspect of this piece lies in its compositional layout, for this piece is composed of only chords, which are played freely and follow the nature of the scene it is attached to. Initial analysis shows that the piece was composed in either C[#] minor or E major; however, many of the chords do not fit within the traditional diatonic harmony of either key. While some chords could be found in either key, like the use of an E major or C[#] minor chord, many other chords fall outside the harmonic functions of both keys. The chords seem to follow a more basic, or instinctual form of resolution, with

many of the chord members moving in step-wise motion, including the bass pitch. This track was composed using the technique of pandiatonicism, meaning that chords and pitches from the diatonic system are used but not in traditional harmonic progressions and dissonance treatment.[41] This pandiatonicism directly references the player's accomplishment of creating order out of nothing, by naturally choosing pacifism.

In this scene, players are judged on all the choices they have made throughout the entire game, every mercy, every spar, or every fight is analyzed and used to determine the player's fate. "The Choice" is used as a direct reflection of the player and all the choices they have made, from gaining EXP to never gaining a single LV, rewarding players on their "good" choices. The chords themselves are very pleasing to hear; they are almost angelic in how they fade in and out of the space, having no real tempo and no rhythm to follow. It creates order out of the chaos, creating consonant chords and harmonies out of the boundaries of the diatonic harmonic progression it stems from. The track continues to play as players make their way to the King's throne room. In the Genocide route, instead of getting "The Choice" after judgment, players get the track, which can be argued to be the most memorable in the entire *Undertale* soundtrack, "MEGALOVANIA."

[41] Stefan Kostka, *Materials and Techniques of Post-Tonal Music*, 4th edition (Boston, Pearson, 2012), 97.

Second Chances and Second Tries

Thus far, this chapter explored and analyzed musical tracks and situations that are a direct result of the player's moral compass, but what happens when the route is completed? While the musical tracks do differ from route to route and are intended as both rewards and punishments, depending on the player's choices, the only time *Undertale* explicitly judges the player's choices is during the meeting with Sans shortly before the end of the game. All other examples of judgment are personal interpretations that change based on player experience and understanding of cues presented by the game. The final judgment is given to players once the route is completed, and once you complete a route the game remembers everything. The order in which players complete the three different routes will permanently affect the other routes, ranging from minor to drastic changes. The ability of the game to recall and implement cause-and-effect actions in response to previous game input is a unique aspect of gameplay in *Undertale*.

Typically, players with no previous experience or knowledge of the game's mechanics will unintentionally trigger a Neutral route after the initial scene with Flowey. The final endings for both the Neutral and Pacifist routes are essentially the same, with subtle differences that are meaningful nonetheless. In the Neutral route, there is a scene that is triggered after the first battle with Flowey, with the player receiving a phone call from Sans. It is important to remember that Asgore was turned to dust by Flowey before they begin to fight the player, and run away after the player wins. During a phone call with Sans, he explains how everything is changing with Asgore gone; the

Queen has returned and everyone is beginning to move on. Here, the track "An Ending" (Fig. 3.6) can be heard playing.

The piece itself is a slowed version of the track "Ruins" and features the *Double R Theme* leitmotiv, all played in the key of F[#] minor. This track is interesting compared to the others, because it is only heard in the Neutral route during the phone call scene with Sans. Morally speaking, this is one of the only pieces that truly is “neutral,” instead being used as a reward or punishment for good and bad choices. Based on the name, one would assume that this song signals that some kind of ending or conclusion has been reached. However, after the song is played the player is then instructed to either go back to try and get a different ending or leave the game and create a new save file. The connection between this track and "Ruins" can also be interpreted as the game subtly telling players to go back to earlier sections of the game. From this, players can conclude that they have done something amiss, meaning that the game itself is telling players that something happened and gives the player the choice to “fix” what happened.

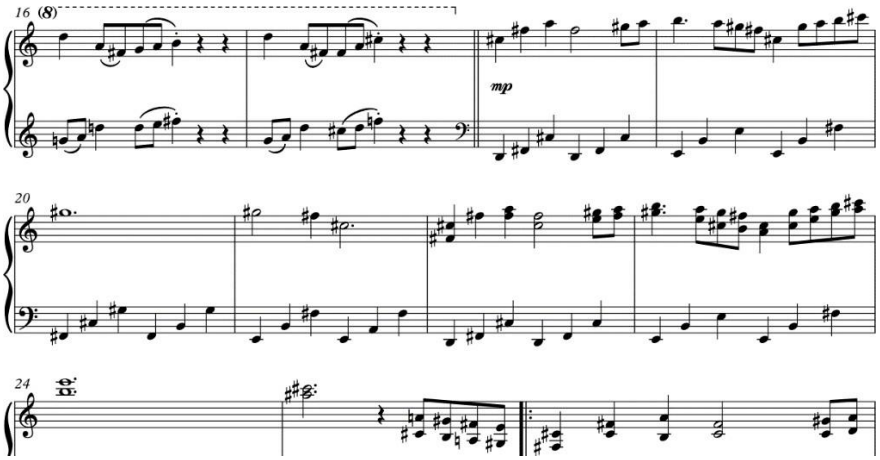

Figure 3. 6 "An Ending," mm. 18-25

This is one of the only times in any of the routes where players are allowed to travel back and “change” some of the initial choices they have made. If players were to then go on and complete the final steps needed to reach the Neutral ending, they will notice that any route completed afterward is changed. If one was to start with completing a Pacifist route and then attempt a second playthrough, a cutscene will be triggered of Flowey begging the player to leave the world alone. The moral implications of this are extremely effective to players, because who could disrupt such a happy ending after completing a Pacifist route?

Completing a Genocide route before any other routes permanently changes the save file, resulting in the corruption of any Pacifist ending in future playthroughs. Comparatively speaking, the Genocide route is simultaneously easier, in terms of mechanical gameplay, and more difficult than the Pacifist or Neutral routes, in terms of emotional manipulation. Players would have to trigger every single possible monster encounter in every area of the Underground. This act alone results in a distinct change in the music players would have experienced from other routes. The ambient music cues and sound objects are noticeably slower and more drawn out to the point of barely being recognizable. While this is a punishment for players, creating a continuous haunting atmosphere that players must endure till the very end, it also gives players new tracks. The most notable are the tracks "Battle Against a True Hero," "Power of NEO," and "MEGALOVANIA." These are fighting tracks for the characters Undyne, Mettaton, and Sans, only triggered in the Genocide route. For Undyne, the track is heard during the main fight players trigger before entering the Hotlands. Mettaton's track is

heard during the fight before reaching the castle, while Sans' track is heard during Judgement.

There are a few ways that players can bypass this. One is by doing a True Reset after completing the True Pacifist Route, which erases most data from the undertale.ini file. The post-Genocide state is in a separate file and unaffected by even a True Reset. If the Genocide Route is completed before the others, the player concludes the route by destroying the world itself, and are then offered the chance to recreate the world in exchange for their SOUL. Other than manipulation of the files using a file editor, this is the only way to reset the game. However, accepting this offer also activates a permanent flag in the game's files which affects all subsequent True Pacifist and Genocide endings.

Ultimately, this reveals some nuances of *Undertale'*s morality. On failed neutral runs and restarts the game will remind you of your past failures but ultimately forgive you for them if you are willing to work towards a worthy goal. There have been a few studies published that examine player engagement and how it influences future encounters and playthroughs of certain games. Alford's "Learning Good From Skeletons: Ethical Literacies in *Undertale*" is one such example of these studies that take data from those who have played *Undertale*.[42] The data shows that a majority of those who have completed any of the routes chose to complete the Pacifist or Neutral routes rather than the Genocide route. However, those who did complete the Genocide route did so for the sake of getting to experience more of the game's soundtrack. One player

[42] Alford, "Learning Good from Skeletons."

published a review for the game saying that "listening to the soundtrack after doing the first routes played a huge part in my change of opinion on the game. Every single track, except ones that play during scenes I missed on my initial playthrough, had some kind of memory attached."[43] This shows that not only does the music have an influential effect on players during the actual gameplay, but also afterward, once they are aware of the game's full potential.

[43] Matt Leslie, "*Undertale*: Second Chances in Morality," *Medium*, last modified October 9, 2018, https://lesmocon.medium.com/undertale-second-chances-in-morality-e0346fe37377.

Chapter 4: "Good Night"

In this thesis, I explored the three aspects of worldbuilding, narrative storytelling, and morality reflected in the game development and progression of the 2D computer role-playing game *Undertale*. In chapter 1, I established the gaming environment of *Undertale* and discussed how the application of music was directly influential in the overall creation and worldbuilding. In chapter 2, I explored how Toby Fox uses musical tracks and sound-bites as a substitute for spoken dialogue, and the effect it has on overall player immersion. Chapter 3 takes the analytical tools established in chapters 1 and 2 to examine the application of morality and the treatment of the player's “good” and “bad” choices. I have offered a unique application of musical analysis that provides a better understanding of a musical medium not readily available in the study of video game music. Instead of providing a descriptive interaction of possible musical meanings shown in *Undertale*, I focus on the musical value available for players. I conclude by winding back to the Classic FM article first mentioned in the introduction.

The 2020 Classic FM article, "The 20 best video game soundtracks of all time," is just one of the hundreds, possibly thousands of articles published that propose an important question: why is video game music so popular? The motivation and goal of this thesis are not to prove the importance of video game music based solely on popularity. The idea of popularity can be said for other genres of music: for instance, the

popularity of classical music from composers like Brahms and Mahler is alive and well to this day.

The analytical study of video game music provides an outlook into the compositional styles and practices of a genre of music with endless possibilities. For instance, on Sep 15, 2020, a performance was held in Tokyo, Japan by the orchestra group MUSIC Engine that performed a concert for *Undertale*'s fifth anniversary. The concert was presented by Fangamer and 8-4 and was streamed on YouTube and has accumulated over eight million views at the time of this writing.[44] While it is correct to assume that many in attendance have played the game and had some prior familiarity with the music, those who never played the game can also find enjoyment in the music. Music is a powerful tool that can bring together people from different backgrounds and experiences.

Though a recent addition to music scholarship and not explored to its full extent, Ludomusicology offers an interesting and thought-provoking outlook into the possible examinations of the hundreds of available gaming titles. It is not an uncommon practice, especially for those who are music students, to associate certain feelings, thoughts, or emotions with certain pieces of classical music. The same can be said about certain tracks of gaming soundtracks. The reason musicologists, theorists, and other researchers study the music of the past is to gain a better understanding of the history, practice, and creation of the music itself. While I would not propose that video game

[44] *Undertale* 5th Anniversary Concert. Arranged and performed by MUSIC Engine, filmed in May 2019 in Tokyo, Japan, https://www.youtube.com/watch?v=srZdDAJbHfc&ab_channel=UNDERTALEOfficial.

music is superior to classical music, the ability to connect the music to the interactivity of the virtual world within games holds great value, unique to the genre.

Not only are video games powerful tools for individual expression and interactive play, but they also allow players to create personal stories and connections from the gameplay experience. *Undertale* is a uniquely crafted experience that allows players to explore within a world that both encourages self-expression and individual choice, while utilizing music as a tool of communication. It is through this application of music and sound in the creation and experience of *Undertale* that a personalized player experience can emerge. There is no one way to study or analyze a field as broad as music, and the experience and knowledge gained from the inclusion of multiple genres should be a part of the continuous evolution of musical study and creation.

Bibliography

Abbate, Carolyn. 2004. “Music—Drastic or Gnostic?” *Critical Inquiry* Vol. 30, No. 3: 505–36. https://doi.org/10.1086/421160.

Adams, Ernest. 2014. *Fundamentals of Game Design*. San Francisco, CA: New Riders.

Alford, Dylan. 2019. “Learning Good From Skeletons: Ethical Literacies in *Undertale*.” Master’s Thesis, The University of Oklahoma, 101, Shareok, OU – Thesis [1862].

Almirall Nieves, Andrés José. 2021. “It’s More Than a Game, It’s an Experience: Eudaimonic Storytelling in the Music of Art Games.” Master's Thesis, Florida State University, 120, ProQuest Dissertations Publishing (28321365).

Arndt, Matthew. 2011. “Schenker and Schoenberg on the Will of the Tone.” *Journal of Music Theory* Vol. 55, No. 1: 89–146. http://www.jstor.org/stable/41300125.

Bostan, Barbaros, Başak Tınlı, and Güven Çatak. 2020. “Worldbuilding Components and Transmedial Extensions of Computer Role-Playing Games.” *Kültür Ve İletişim* 23, no. 45: 273–95. DOI: 10.18691/kulturveiletisim.709869.

Belinkie, Matthew. “Video Game Music: Not Just Kid Stuff.” Videogame Music Archive, 1999. https://www.vgmusic.com/information/vgpaper.html.

Birch, Spencer. 2016. “Talking *Undertale* with Toby Fox.” *We The Nerdy*, August 18, 2016. https://wethenerdy.com/talking-undertale-with-toby-fox/.

Collins, Karen. 2008. *Game Sound: An Introduction to the History, Theory, and Practice of Video Game Music and Sound Design*. 1st Ed. Cambridge, Massachusetts: MIT Press.

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

Cook, Nicholas. 2001. “Between Process and Product: Music and/as Performance.” *Music Theory Online* Vol. 7, No. 2: 1-15. https://mtosmt.org/issues/mto.01.7.2/mto.01.7.2.cook.pdf

DeRoss, Adam. 2020. “Sonic Rhetoric and Meaning Making in Video Game Sound Design.” Master’s Thesis, Nova Southeastern University, 62, ProQuest Dissertations Publishing (28031407).

Dowd, Tom. 2015. *Storytelling Across Worlds: Transmedia for Creatives and Producers*. New York and London: Focal Press.

Enns, Mack. 2019. "Understanding Game Scoring: Software Programming, Aleatoric Composition and Mimetic Music Technology.” Electronic Thesis and Dissertation Repository. 6432.

Fox, Toby. 2015. “UNDERTALE Complete Piano Score (Digital Sheet Music).” Vol. 1, arranged for piano by David Peacock. Materia Collective LLC, Seattle, WA. https://materia.store/collections/digital-sheet-music/products/undertale-complete-piano-score-digital-sheet-music.

Fullerton, Tracy. 2018. *Game Design Workshop: A Playcentric Approach to Creating Innovative Games.* New York: CRC Press.

Gert, Bernard and Joshua Gert, "The Definition of Morality.” *The Stanford Encyclopedia of Philosophy* (Fall 2020 Edition), Edward N. Zalta (ed.) https://plato.stanford.edu/archives/fall2020/entries/morality-definition.

Grasso, Julianne. 2020. "Video Game Music, Meaning, and the Possibilities of Play." PhD diss., University of Chicago, 206, ProQuest Dissertations Publishing (27958703).

Herz, J. C. 1997. *Joystick Nation: How Videogames Gobbled Our Money, Won Our Hearts, and Rewired Our Minds*. 1st Ed. Boston: Little, Brown, and Co.

Isaac, Chris. 2015. “Interview: *Undertale* Game Creator Toby Fox.” *The Mary Sue*, December 10, 2015. https://www.themarysue.com/interview-undertale-game-creator-toby-fox/.

Jenkins, Henry. 2003. “Transmedia Storytelling: Moving Characters from Books to Films to Video Games Can Make Them Stronger and More Compelling.” www.technologyreview.com.

Kamp, Michiel. 2014. “Musical Ecologies in Video Games.” *Philosophy & Technology*. 27, no. 2: 235–49. https://doi.org/10.1007/s13347-013-0113-z.

Kostka, Stefan M. 2012. *Materials and Techniques of Post-Tonal Music*. 4th ed. Boston: Pearson.

Maenhout, John Joseph. 2018. “Sonic Representations of Categorical Difference in Diegetic Video Game Music.” Master’s Thesis, The University of North Carolina at Chapel Hill, 115, ProQuest Dissertations Publishing (10789709).

O’Neill Surber, Jere. 2015. “Computer Games as a Philosophical Medium,” presented at The Philosophy of Computer Games Conference, Oslo, 2015.

Perez, Matthew. 2017. "*Undertale*: A Case Study in Ludomusicology." Master's Thesis. University of New York, 103. https://www.academia.edu/31336536/Undertale_A_Case_Study_in_Ludomusicology

Ross, Barry. 2017. “The Causal-Manipulative Approach to Musical Meaning.” *International Review of the Aesthetics and Sociology of Music* Vol. 48, No. 1: 3–17. http://www.jstor.org/stable/44259472.

Seraphine, Frederic. “Ethics at Play in *Undertale*: Rhetoric, Identity and Deconstruction.” Paper presented at the 2018 DiGRA International Conference: The Game is the Message, University of Torino, July 27, 2018.

Stockburger, Axel. “The Game Environment from an Auditive Perspective.” Paper presented at the Level Up, Digital Games Research Conference, Utrecht University, NL, November 4-6, 2003. http://www.stockburger.at/files/2010/04/gameinvironment_stockburger1.pdf

Summers, Tim. 2016. “Analyzing Video Game Music: Sources, Methods and a Case Study.” *Ludomusicology: Approaches to Video Game Music*, edited by Michiel Kamp, Tim Summers, and Mark Sweeney. Sheffield, UK: Equinox.

Tate, James Sebastian. 2021. “Creating a Coherent Score: The Music of Single-Player Fantasy Computer Role-Playing Games.” PhD diss., Durham University. Durham E-Theses Online: http://etheses.dur.ac.uk/14059/.

Van Elferen, Isabella. 2016. “Analyzing Game Musical Immersion: The ALI Model.” *Ludomusicology: Approaches to Video Game Music*, edited by Michiel Kamp, Tim Summers, and Mark Sweeney, 32–52. Sheffield, UK: Equinox.

Van Elferen, Isabella. 2020. Ludomusicology and the New Drastic. *Journal of Sound and Music in Games* Vol. 1, No. 1: 103-112. https://doi.org/10.1525/jsmg.2020.1.1.103.

Biographical Sketch

Megan Mae Franklin is a native of Kentucky, having lived most of her life in Northeastern Kentucky in the small town of Milford. They completed their undergraduate education at Berea College, where she received her Bachelors of Arts in Music in May 2020. She continued her schooling at the University of Kentucky, where they received their Masters of Arts in Music Theory in August 2023. Miss Franklin held a position as a teaching assistant for the Department of Music at Berea College andwas rewarded a teaching assistantship with the Department of Music at the University of Kentucky. During their time at Berea, they were awarded the Underwood-Alger Music Scholarship in 2018, and again, with the addition of the Sherwood-Hill Award in 2019 for her academic excellence.