The Research on the Relationship between Music and Player Interaction in Video Games: A Case Study of the RPG Genre

Rui Wang [1, a, *]

[1] *Music Performance, School of Art, South China University of Technology, Guangzhou. Guangdong, China*
a. 201930531033@mail.scut.edu.cn
corresponding author

Abstract: With the arrival of the network information age in 2022, people choose more and more ways of entertainment, among which video games have become one of the entertainment ways for many young people. Nowadays, the combination of electronic games and music gives players a higher sense of experience and immersion in the game and also makes game promotion more diversified. Among them, RPG games have "vitality" in the game world, which can bring players different world experiences and give players creativity. Not only that, RPGs can provide players with a sense of visual and auditory impact on game stories, backgrounds and interactions. As the most immersive game type, RPG also requires higher interactivity of game scene music and sound effects. This paper takes video games as the research object, based on Jonathan Kramer's music enlightenment on the new theory of music time, and uses the literature research method to analyze the unique characteristics of music sound effects of RPG games, as well as the interaction between game music and players, including how players control the playing of game music and the difference of game music in different types of games and players' sense of experience. Through research, it is found that game music has the characteristics of variability, guidance and theme. Based on theoretical research, it is found that the most significant new feature of game music is nonlinear, which is also one of the essential properties in that players can freely control the playing of game music.

Keywords: Electronic game, Game music, Player, Game music features, Interaction

1. Introduction

From 2000 to 2022, network information developed rapidly and exerted a certain degree of influence. With the advent of the network information age, the Internet also occupies the first place in the modern economy, social networking, entertainment and other fields and has gradually become an indispensable part of people's daily life. Over the past few decades, with the continuous development of the Internet, it is no longer a tool to supply information only. Now it permeates every aspect of human life. Not only that, but the Internet is also constantly transforming human cognition and values, and eventually, all ideas and thoughts into a new form for dissemination.

At the level of network life, it creates a virtual society for human beings, and people can seek emotional value through the network. With the advent of the virtual community, the web has dramatically changed people's social interaction. This new form of social interaction no longer

requires face-to-face communication. It can be said that people can freely interact with people in different fields and regions in the virtual network, and the media for interaction range from the most original communication tools to the most popular electronic games in recent years.

With the continuous changes in the network era, electronic games have improved not only from the screen images but also significantly changed in-game music. The earliest video games did not have the term "music and sound effects." It can be said that music and sound effects are not inherent elements of media games. Back in 1971, Computer Space, the first game to be called by the public, came to the attention of the people. It was the first game with music and sound effects in history, and its arrival also made significant changes in the development of the game industry - electronic games have auditory output. Up to now, the reason why electronic games are so popular is that electronic games have a significant feature of interactivity, that is, a connection and feedback between people and electronic devices. In essence, it can be divided into visual feedback and auditory feedback. In auditory feedback, music is an indispensable part [1]. From the perspective of the development of game music, the original game music evolved from the sound effect of objects, followed by the enhancement of the interaction between players and game music, that is, from the single channel loudspeaker to the immersive stereo surround, which also makes today's game music one of the most efficient tools for establishing the interaction between games and players.

Nowadays, the game industry and music can integrate and promote each other, and it can be said that the game can not leave the support of music. However, although video games rely on music to achieve, this does not prevent music from still being the most effective weapon that video games can be popular so far. The media said: "Music is designed to stimulate your senses at the same time and integrate into the background of your brain because this is the meaning of music.". It can be said that sound is an invisible interaction mode in the game and also an invisible assistant of the player [2]. Good music and sound effects can not only make players more immersed in the game story but also better promote the development of the game story. It not only encourages the rapid growth of the game industry in the past 50 years but also brings players the enjoyment of hearing auditions, which is one of the advantages of electronic games in attracting modern people.

Since the development of electronic games, role-playing games (hereinafter referred to as "RPG"), as the "ivy" in the game, have been evolving continuously for decades. Its particular RPG game is based on a background story to build a virtual world for players to immerse themselves. In this virtual world, the player is responsible for playing a role in conducting normal behavior, and the part grows and develops through the player's instructions. In terms of music sound effect design, RPG music is usually created following the story background of virtual world-building. The sound effect settings of the hero's behavior maximize the simulation of real human sound effects, such as the excellent effect generated by the friction between the sole of the shoe and the floor during running, the sound development of waving the fist during the fighting, etc. These sound effects often appear in people's daily life, but they are often ignored. The designer of the game music ingeniously carries a specific virtual world background color in the full simulation, which makes the players quickly associate themselves with life while denying their sense of reality brought into daily life. This is a unique virtual world created for players.

Game music itself is a manifestation of art and culture, but it has always been integrated into people's daily life and is taken for granted. Compared with film and television music with rich theoretical knowledge, the theory of game music is relatively rare. This paper studies the interaction between game music and players through literature research and compares the most significant difference between film music and game music based on theory. The purpose is to provide specific reference directions for players and creators of game music and hope that more people can understand the development of music through the game itself.

2.   The Characteristics of the Game's Music Sound

2.1. Game Music is Variable

In RPG games, game music often changes according to the changes of some factors, which also makes game music have variable attributes. The music may vary with the status of the characters at that time or with different scenes. All changes are subject to game-specific rules—the background of the game changes with the player's operation. There are no specific rules for players to follow. This leads to uncertainty in the triggering and end-of-game music [3].

This section mainly takes RPG games as an example to study the variability and change mode of game music in specific rules in terms of cycle time and geographical location.

2.1.1. It Changes Over Time

The game music in RPGs often plays different music as the game time changes. This time may be the same as or different from real-time. When immersing in the virtual world, people must accept the rules of the virtual world.

For example, in the popular RPG game Dying Light (after this referred to as "DL") developed by Techland, the protagonist can open the backpack button to view the game time. The whole world will run like the real world, but the rules of operation follow the rules of the DL game. The music also changes each time slightly. At different game times, the music heard in specific places may be different.

DL is a doomsday parkour RPG game based on the zombie theme. Players must avoid the zombie attack in the doomsday to explore the world. In the game's background, the music of DL is mostly in minor melody, and the main instruments are piano, bass, water piano, etc. The little tune makes the sound effect more cold and scary. The rule of DL at nighttime is that zombie attacks will be more violent. Therefore, in terms of music and sound effects, most of the music at night is played by water harps, and the sound effects are more broken when zombies hit the window glass than in the daytime, which makes players feel excited about the night. This is also the unique charm of DL game music sound effects.

2.1.2. It Varies with the Location

An RPG game with a grand worldview usually has different regions. Players can freely explore or enjoy the local cultural styles from other areas, which are divided into "real regions" and "virtual regions."

The hacker game Watch_Dogs2 (from now on referred to as "WD2"), developed by Ubisoft Entertainment, names the game scene with natural regions, that is, regions that can be found in the real world. In contrast, game music is written according to the characteristics of different areas. For example, when entering the Chinese region of the WD2 game, the theme uses Chinese national instruments to show the unique regional color of China. These music are equivalent to the symbols of their respective regions. The piece also has a solid regional color and a vital, realistic associative significance [1].

Unlike "real regions," "virtual regions" are regions created by game companies that do not exist in real life, but some scenes are adapted according to reality or imagination. For example, in the Grand Theft Auto V (after this referred to as "GTA V") released by Rockstar Games, the whole city is a virtual city, "Los Angeles City," adapted from Los Angeles, USA. When players pass by the seaside, the sound effect of the game often uses the sound of seawater as a unique element to blend into the background music; When characters pass the nightclub, the game music is combined with DJ music with electronic style as their background music. These game music are triggered in

specific places, allowing players to generate certain associations from the game music. The purpose of this game music is to let the player's subconscious believe the authenticity of the game world so that the player can bring into the perspective of the game hero to explore the virtual world.

2.2. Game Music is Instructive

If game designers want players to achieve a certain achievement or goal, they often need to guide players, which is a necessary condition for existence in all kinds of games. The most important part of RPG games is the fight and escape mode. Can players be guided by gorgeous special effects? How to guide? How to effectively guide? Becomes another problem. Maybe the designers also know that they can't enhance screen guidance by deleting special effects. At this time, game music becomes the most powerful tool to guide players.

This section mainly studies how game music provides players with correct and fast information as a condition to guide players in RPG from the perspective of "active music" and "passive music" and how players can receive the information transmitted by these game music.

2.2.1. Diegetic Music

In RPGs, the protagonists often have different states or actions, such as the characters being hungry and cold, singing, playing musical instruments, etc. The musical sound effects produced by these states are objective things, that is, music as a part of the game, also known as "active music." In electronic games, the concept of active music is similar, which refers to the music emitted by a character's behavior on the game screen. This character can be a player or NPC, and it is a music type that directly participates in the overall game worldview architecture and plot narrative [1].

ARK: Survival Evolved (hereinafter referred to as "ARK"), developed by Wildcard Studio, is an open-world game with dinosaurs as its theme. Here, the guidance of active music to players is particularly important. Players need to collect, build, tame and other actions to survive in this world, so they often simulate the state of real humans, such as hunger, cold and so on. Without too many screens prompts, video game designers need to simulate some relatively easy-to-perceive physical phenomena, such as the short time of sound transmission, the space where the sound is emitted, and the frequency change of the sound in different environments [4]. For example, when the characters are hungry, the sound effect of the game is expressed as stomach growling; When the characters are cold, the sound effect of the game shows that the characters' voice trembles and their gasps increase; When the characters enter the mine cave in a dark and horrible atmosphere, their background music is replaced by a piece of cooler music, and the sound effect of the hero's action is full of echoes.

These music and sound effects can not only correctly guide the current progress of the player's game, but also guide the player to choose the state or action of the game protagonist.

2.2.2. Non-diegetic Music

"Fight and escape" are two indispensable modes in RPG games and other games. Players use the changes in in-game music to quickly obtain information. When the game music changes into fast and intense music, they enter combat mode; when the game music returns to the gentle background music, it is often because the player is out of combat mode. This kind of "voice-over," which is added subjectively by the game designer and does not exist in the game itself, is called "passive music" to guide players.

In ARK, there is also a switch between "fight and escape" mode. When the player is chased by wild dinosaurs, the background music is replaced by a piece of compact and strong music to guide the player to fight; when the player wants to escape and the background music changes from fierce music to gentle music, it represents the end of the battle mode.

This kind of battle music guidance enables players to use the first-person game to conduct the escape action process without frequently turning back to confirm whether the escape was successful. It is more effective to use music to guide and spread information.

2.3. Game Music is Thematic

The theme of music is significant no matter what kind of music form. It carries the logic of music development and unifies the role of music thought. In the field of traditional music analysis, most music works are analyzed from the theme. Game music is no exception, and the design of its music theme will be closely connected with the central theme of the game itself [3]. After the launch of a game, the game company will continue to update and improve the game for the sake of popularity. Among them, festival activities have become one of the sources of each game's playability and popularity, and the corresponding game activities will also have corresponding theme music added.

This section studies the logic and unified theme before and after the game music through the theme music of the game activity and the theme music of the game itself.

2.3.1. Special Theme Music for the Event Theme Music Based on the Context of the Game

The key for game planners to make the game more attractive to players lies in the following playing methods and activity theme expansion, and the corresponding activities will prepare exclusive activity music.

In the love role-playing mobile game Love of Light and Night (hereinafter referred to as "Love of Light and Night") developed by the Northern Lights Studio under Tencent, each activity has its music and sound effects. This music is integrated into the characteristics of each exercise. For example, in the 2022 Qixi event "The Remaining Trace of a Dream," the theme of the activity is the theme of the Republic of China. The music of the game activity is accompanied by instruments representing Chinese traditional music, such as zither, and even features Beijing opera elements, which make the players associated with the period of the Republic of China.

A single background concert causes hearing fatigue in players. Therefore, in the light and night game activity, the main musical instruments of all music are mainly Chinese traditional musical instruments, and many music clips are carried out around the theme of the Republic of China. The purpose of this is to prevent players from hearing fatigue while maintaining the unique theme of the activity.

The activity theme music often has multiple fragments, but it is created under a theme background as a whole. It has the characteristics of different melodies but unified main instruments and styles, like the interpretation of "album" and "songs in the album."

2.3.2. Theme Music Based on the Context of the Game

An excellent RPG is often accompanied by its unique plot and music design. RPG music is created according to the background and style of the game.

The theme music of the Grand Theft Auto series games released by Rockstar Games has been widely praised. Among them, the popular song is "Soviet Connection," the theme song of Grand Theft Auto IV (hereinafter referred to as "GTA IV"). The theme song of the game is created according to the background of the GTA IV game. The combination of the Lute and violin as the main instruments depicts the scenery on the surface and the dirt behind the "Free City" in the game. It starts with a light staccato, slowly adds the violin to the theme of the whole song, and depicts the novel psychology of the game protagonist in and out of the "Free City" and then gradually falls into local corruption.

Based on the characteristics and themes of each different game music, different game music is produced by using specific instruments to make players enter Lenovo and achieve a deep impression.

3. The New Features of Game Music and the Interaction between Players

3.1. To Interpret the New Characteristics of Game Music from the Musical Inspiration of Musicologists

Music can be combined with other art forms, but it is an independent individual. For example, music combined with games has the basic characteristics of variability, guidance and theme. From the perspective of the interaction between game music and players, the way the audio-visual content in the game unfolds on the timeline depends on the specific operation of players. The relationship between content and time is unstable, discontinuous, and almost difficult to reproduce [5]. This kind of music, which is not presented by implication and logic, is also a new feature of game music - nonlinearity.

This section studies RPG based on the music theory proposed by Jonathan Kramer, mainly explaining the interaction between players and the new features of RPG music and comparing the biggest differences between film and television music and game music based on theory.

3.1.1. The Biggest New Feature of Game Music is Nonlinearity

In recent years, the linear and nonlinear music theory proposed by Jonathan Kramer, a musicologist, has exerted a strong influence on the West. He crossed the angle of music and philosophy and put forward this view from an objective perspective. He divided music into linear and nonlinear music. Jonathan Kramer explained that the basis for determining some characteristics of music is that its meaning is generated by (some) principles and trends that govern the whole music works (or segments). Therefore, nonlinearity is not "forward" [6].

In the second chapter of this article, it is mentioned that RPG music has the basic characteristics of variability and theme. The game concert changes with many factors. This basic characteristic is also a key to enabling RPGs to interact with players. The music designer will design specific game music according to different game scenes. Therefore, RPG music is composed of many pieces of music without up-and-down hints and logical relationships. It depends entirely on the players' actions or changes in state. Another key feature is the theme, which means that music clips are not necessarily connected, but they are created according to the same background tone or tonality. From this point of view, the biggest new feature of game music is nonlinear.

3.1.2. Compare Movie Music and Game Music

The biggest difference between film and television music and game music is that film and television music can not interact with the audience. In addition, film and television music mainly follows the characteristics of linear music. That is, the basis for determining some characteristics of music is that its meaning is generated by previous music events in work. Therefore, the linearity is "forward" [6].

The development of film and television music has entered the late stage of development, and its theory also has a comprehensive explanation. Although both are music arts, game music, as a newly developed project, is different from film and television music in terms of communication and interaction. However, just like the development of movies, video games have also experienced a transition from silent to vocal. Electronic game music has also developed from simple embellishment into a huge music system around the game theme [7]. The original RPG music

settings evolved from film and television music. It imitated film and television music to add the whole opening song and ending song to the game. However, after the development of electronic games towards interaction, the game music also transited from the whole song at the beginning to piecemeal music.

When Grand Theft Auto I was released in 1997, interactive music had been set. It was so detailed that the owner disclosed that the music played by each car would be different. However, due to the limited technology at that time, there was not much music created, which could only support a game. However, it also laid a starting point for the next interactive music of the Grand Theft Auto series.

The biggest new feature of game music is nonlinear, but it also has the characteristics of linear music. For example, although the relationship between sound and painting of the game is nonlinear, the game inherits some logic of film and television theory in audio-visual performance. That is, the content of sound and painting should be consistent in style, mood and rhythm [5].

For example, in Cyberpunk 2077 (hereinafter referred to as "2077"), developed by CD Project RED, to better let players experience the world of 2077, they are also interspersed with story modes. Players can choose to watch animated stories to help them understand the world background and rules of 2077. In terms of music, in addition to the music that changes interactivity due to the change of players' state, there is also animation game music with linear characteristics. These animation game music mainly serve the animation scenario of 2077. They are similar to the creation of film and television music and have the characteristics of linear music. In addition, their functions are similar to film and television music, which are used to undertake the music of the previous scenario. It enables players to watch a beautiful clip movie and immerse themselves in the virtual world of 2077.

However, although game music has the characteristics of partial linear music, the nonlinearity of game music still plays a major role. The film and television music is based on the atmosphere needs of film and television clips, skillfully splicing music clips of different times, different regions, different genres and styles to make a new melody, which is used to highlight the expression of ideas or emotions in film and television scenes, and ultimately cause the emotional resonance of the broad audience [8]. It can be said that film and television music is to let the audience resonate with music and painting rather than interact with the audience. It can not change according to the state and action of the audience, but it follows a whole logical system. The difference between computer games is that, unlike movie audiences or music listeners, game players need to integrate themselves into the game and become participants in the game framework [9].

3.2. Game Music and Player Interaction

Up to now, the development of RPGs has focused on the interactivity between players and games. The interactivity is the feedback between the game and players, which can be interacted from two aspects: input mode and output mode [10]. It can be said that the player is no longer a single information receiver. Film and television can continue to play without an audience, and music can continue to play without an audience, but games without players are incomplete games. Not only the game but also the game music changes with the game, but the game is finally controlled by the player. Without the player, the game music is only played in a single clip form, without any change.

This section studies how game music interacts with players in different types of games and compares how different types of game music interact with players.

3.2.1. The Player Controls the Order in Which the Music is Spliced

As mentioned above, RPG game music has a variety of basic characteristics, which are composed of fragments and fragments. Generally, there is no logic to find, which makes players themselves new "game music designers." Since each segment has a specific trigger location or time, the player can use the game character to control the playing of game music. Except for the specific animation plot music in the game, the rest of the music can change with the player's control.

For example, in Grand Theft Auto V, players can switch radio music freely according to their preferences in the car. When the radio music changes into a different music clip with the switching of players, they can be combined into a piece of unique music for players. That is why the biggest new feature of game music is nonlinear. If game music can not be controlled by players, the production process is no different from film music. Because of the interactivity, the game audio designer does not need to create complete music. Instead, he only needs to create a large number of clips for players to randomly splice and play. Finally, new complete music is generated under the control of players, which is the biggest reason why game music can interact with players.

3.2.2. Interaction between Different Kinds of Game Music Sound Effects and Players

Among many kinds of games, music games are one of the most special forms of games. It is the only game where music comes first and then games so that games can promote the development of music. However, the essence of audio games is games, so the music in audio games also follows all the characteristics of game music. Different kinds of music have great differences in player interaction. The music in music games is mainly reflected in the guidance to players.

For example, the music game "Phigros," developed by Pigeon Games, allows players to click notes falling from the sky to judge the standard and give scores after completing the song. In the game, "Phigros" designed a click sound effect to remind players whether they missed notes, which also gave players a guiding hint.

In games with strong gameplay, game music also interacts with players. Action Game (hereinafter referred to as "ACT") games usually have a simple plot. The main method of play is to control the game characters to destroy the enemy and win. In the ACT game Counter-Strike: Global Offensive (hereinafter referred to as "CSGO") released by Valve Software, the background music is relatively simple due to the small and fragmented map. However, CSGO's rich game sound effects give players an excellent game experience. Players should not only judge the enemy's position through sound effects such as running and shooting but also use sound effects to judge the specific direction of C4 bombs. Not only that, CSGO's sound effects are all surround sound effects, allowing players to use various internal sound effects to determine the enemy's position.

This combination of vision and hearing enables players to interact with game music and sound effects to a certain extent. Different game music and sound effects are designed according to the different mission purposes of different games. Their general purpose is to enable players to have a better experience, which is one of the reasons why electronic games can become the most popular entertainment mode.

4. Conclusion

Game music exists in the game in a subtle form. Game lovers may ignore the importance of music when playing games, but when they turn off the stereo, they will find that without the support of music, the fun of games will be greatly reduced, and even the game can not be played. Game music has such charm that it can silently foil the game, but without it, the game will become incomplete. Similarly, there is such a relationship between players and games. The combination of players,

electronic games and game music is called a real game. Once any of the three factors are missing, they can no longer be called games.

Nowadays, game music has gradually evolved into a discipline that attracts more young people to explore. It is hoped that shortly, people will realize that game music is an indispensable part of games and participate in this new field so that the development of game music can be understood by more people.

This paper only uses the literature research method to study the interaction between game music and players through the characteristics of game music, but the study of game music is not only that but also different areas can see the existence of game music from different angles. Future scholars can use the survey and research method to find out the understanding of game players of different ages and genders and their feelings about interaction effects through in-depth interviews and comprehensively consider the interaction between sound effects and players in various games to explore the interaction effects between game music and players from different perspectives.

References

[1] Jiacen, L. (2021) A genre study of video game music. Nanjing University of art. DOI: 10.27250/d.cnki.gnjyc.2021.000240

[2] Jingyan,Q., Biyu,L., Yingying,Z.(2011) Effects of Sounds on User Interactive Experience in Game Design. Packaging Engineering, 32(22). DOI: 10.19554/j.cnki.1001-3563.2011.22.008

[3] Kuan,J.(2022) Research on interactive thinking in game music -Take the two works of Octopath Traveler and Celeste as examples. Shanghai Conservatory of Music. DOI: 10.27319/d.cnki.gsyyy.2022.000080

[4] Ziang,Y.(2022) Thoughts on sound art in video games. The Artist, 08. Retrieved from:

[5] https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDAUTN&filename=YSJA202208047&u niplatform=NZKPT&v=VWJSAgPrDLUXo97ImSJCd51OSppmJFwTOZYeViOUFcwHWVfSO3xz1LHQ8XpN19Zz

[6] Xinyue,W.(2022) On the New Characteristics of Music in video game medium. Music Life, 04. Retrieved from:

[7] https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2022&filename=YUSH2022040 02&uniplatform=NZKPT&v=7CmKI-uytBmbJTI5mX7ReJZJCsWvhIEzcrLct1HC05aCyBHig8dFmyGa16LfyTjY

[8] Zongquan,H.(2013) A Study of Linearity and Nonlinearity in Music -- A Philosophical and Aesthetic Study of Jonathan Kramer's New idea of musical Time. Huang Zhong (Journal of Wuhan Conservatory of Music), 03. https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2013&filename=HZWH201303017& uniplatform=NZKPT&v=-WLXSwYdxiik8dGbjZyafyoQ58BflNAp8FCTwj5bJ8bEyEpBajmeBbjERkD6xw4X

[9] Mingsheng,W.(2011) The development of video games and video game music. Great Stage, 03.Retrieved from: https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2011&filename=DWUT201103061& uniplatform=NZKPT&v=JlrhxLCJMmY8khPd4z3LSLjx8HP7uhii4JlTV4YkKqRnBCWW86qxN2wwmncCEpoQ

[10] Mu,Z.(2022) Explore the artistic characteristics of film and television music. Art Evaluation, 03. Retrieved from: https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2022&filename=YSPN2022030 54&uniplatform=NZKPT&v=57YtoqiY3x7mRt0wlTUkh5zB5JVPqsgUe_zuABSP2MU -NN9PvVMBD2mJGA-uRxQo

[11] Dawei,B.(2008) Games are art. Journal of Nanjing Arts Institute(Fine Arts & Design), 04. Retrieved from: https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2008&filename=NJYS200804041&u niplatform=NZKPT&v=Wkbk7xNTbIrQRDiaKz7AJ6e3vNk50yIt3hAXTQa5JavpJ8p4z5eVg_Sm60SCtd -e

[12] Huan,Y., Yan,Y., Yuanyuan,C.(2015) A study of Interaction in The Role Play Game. Heilongjiang Science,6(06). Retrieved from:

[13] https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2015&filename=HELJ20150605 7&uniplatform=NZKPT&v=MGphVRe1DIAFQ4XWth9VEGlGj1DdVOLytUYAydd4V_JV8eXrT8og6xM6LM82lC UP