

Being in the game

Towards a definition of musical immersion in video games

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Abstract

When discussing video games the term immersion is often used. However, there seems to be a lack of academic consensus regarding the definition of this term. Some researchers claim that video game immersion and Csikszentmihalyi's optimal experience should be seen as two distinct concepts, but the terms are also often used interchangeably. This same lack of academic consensus is found in the definition of game musical immersion. This concept has been hinted at by researchers, investigating the role of music in immersion, but a definition has yet to be found.

In this thesis I discuss three theories regarding immersion and how they correlate. I first explore the theory of the optimal experience by Mihaly Csikszentmihalyi, where a state is described where a person loses a sense of the self and is engrossed by their activity. This theory of flow, as Csikszentmihalyi describes it, can be viewed as a generalized theory of immersion. It describes requirements for achieving the optimal experience in our activities. Furthermore, I discuss how this is applied to video games based on Laura Ermi and Frans Mäyrä's SCI-model. This model allows to break up the complexity of video games into three dimensions. The sensory, challenge-based, and imaginative dimensions describe different types of immersion. Then, I dive deeper into the ALI-model by Isabella van Elferen. This model describes three dimensions of game musical immersion. Where musical affect, literacy, and interactivity overlap game musical immersion is most optimal according to van Elferen. I conclude this thesis with a proposed definition for game musical immersion for which van Elferen paved the road.

Table of Contents

Abstract	1
Introduction	3
Flow	7
SCI-model	11
ALI-model	14
Conclusion	21
Bibliography	23

Introduction

When I am playing a video game, reading a good book, or watching a great movie I sometimes get the feeling that I am transported to the world that is being described. The character's feelings seem to become my very own, as if I am experiencing the world through their eyes. Time appears to move at a different pace, where a duality often occurs. In the moment time feels like it passes slowly, but when you emerge from this transported state a lot of real time has gone by. This phenomenon will very likely sound familiar to you as well. It is often described with a metaphor of immersion.

The definition of this term is usually very vague and different scholars use it in various ways. In the literal sense, being immersed means to be enveloped in a medium, most often a liquid such as water. Digital and written media do not afford their audience to be physically submerged, so immersion should be seen as a mental sensation. Many academics have attempted to form a definitive theoretical framework for analyzing immersion in different media but there does not seem to be a consensus among them. For this thesis I am specifically interested in musical immersion in video games as described by Isabella van Elferen. According to van Elferen, musical immersion has not yet been defined but only hinted at.¹ Van Elferen does however provide a framework that paves a road towards that definition.

No model encapsulates the entire complexity of the video game immersion concept, but all capture important elements for a deeper understanding of the phenomenon. In this thesis I will explore these different models and theories of immersion and how they contribute to a broader understanding of game musical

¹ Isabella van Elferen, "The ALI Model: Towards A Theory of Game Musical Immersion," in *Ludomusicology: approaches to video game music*, ed. Michiel Kamp, Tim Summers, and Mark Sweeney (Sheffield, UK; Bristol, CT: Equinox Publishing, 2016), 1-3.

immersion. To achieve a definitive and concise definition of musical immersion, I will first explore the theory of flow by Mihaly Csikszentmihalyi. Secondly I will be analyzing the SCI-model by Laura Ermi and Frans Mäyrä who explicate three distinct types of immersion. And finally, I will examine the ALI-model by Isabella van Elferen which discusses three key factors in achieving musical immersion in video games.

First it is important to note what is meant by the term immersion. For a definition of immersion one could look towards Mihaly Csikszentmihalyi's theory of flow. Csikszentmihalyi describes flow as the state in which a person completely loses a sense of what is happening around them and is fully engrossed in their current activity.² This theory of flow is a rather general one, but can be applied to many different activities. When I use the term immersion in this thesis I refer to this state. However, the metaphor of immersion has other connotations connected to it. Chapter one will show that the terms flow and immersion can be, and are, used interchangeably.

Ermi and Mäyrä have distinguished three types of immersion: sensory, challenge based, and imaginative (SCI).³ In the model that they defined the player's experience is at its core, and the described feeling exhibits many similarities with Mihaly Csikszentmihalyi's theory of flow.⁴ Ermi and Mäyrä argue that immersion is a multi-faceted phenomenon and that it differs from experience to experience.⁵ This research by Ermi and Mäyrä suggests that every game, and every player, should be analyzed as their own entity which complicates the global analysis of

² Mihaly Csikszentmihalyi, *Flow: The psychology of optimal experience* (New York: Harper-Collins Publishers, 1990), 43-70.

³ Laura Ermi and Frans Mäyrä, "Fundamental Components of the Gameplay Experience: Analysing Immersion," in *DiGRA '05 - Proceedings of the 2005 DiGRA International Conference: Changing Views: Worlds in Play* (2005), 7-9, <http://www.digra.org/wp-content/uploads/digital-library/06276.41516.pdf>.

⁴ Ermi and Mäyrä, 1-3.

⁵ Ermi and Mäyrä, 7-9.

video games.⁶ The second chapter will show that this model can be used to break down the complexity of video games into three categories of immersion. Video game research can quickly become daunting because the medium is inherently multi-modal and subject to outside factors. This chapter will be focused towards the sensory immersion dimension and game musical immersion. However, to get a full grasp of the SCI-model I will also briefly touch upon the challenge-based and imaginative dimensions.

In the third chapter I will be analyzing van Elferen's research on musical immersion in video games, in which she proposes a model to analyze it. The ALI-model describes three key factors for analyzing musical immersion in video games that relate strongly to each other. The first factor is musical affect, concerning the emotions that are evoked in the player.⁷ The second factor is musical literacy, this describes the player's ability to recognize established patterns in the game's soundtrack as one would in a spoken language.⁸ The final factor is musical interaction, which correlates to the direct influence the player has on the video game and its music.⁹ In this research van Elferen raises the question what musical immersion entails because in the past its definition has only been hinted at in other research. Researchers Jiulin Zhang and Xiaoqing Fu have proposed that music has a large influence on video game immersion for example.¹⁰ There is however little research on game musical immersion as its own concept.¹¹

By incorporating examples from different video games I will be exploring these different theories and how they correlate. The games I use cover many dif-

⁶ Ermi and Mäyrä, "Fundamental Components of the Gameplay Experience: Analysing Immersion," 7-9.

⁷ Van Elferen, "The ALI Model: Towards A Theory of Game Musical Immersion," 6-7.

⁸ Van Elferen, 3-4.

⁹ Van Elferen, 4-6.

¹⁰ Jiulin Zhang and Xiaoqing Fu, "The Influence of Background Music of Video Games on Immersion," *Journal of Psychology & Psychotherapy* 5, no. 4 (2015): 1, <https://doi.org/10.4172/2161-0487.1000191>.

¹¹ Van Elferen, "The ALI Model: Towards A Theory of Game Musical Immersion," 1-3.

ferent gameplay mechanics and make use of music in various ways. Gameplay mechanics do not only cover the inputs available to the user, but also how these inputs work together to form the experience. One could think of how the game responds to a player's inputs. For example, when pressing the jump button in games such as *Super Mario Bros.* the character on screen seems to defy gravity and jumps higher than one might expect in the real world. In comparison, characters in other games such as the *Legend of Zelda* or *Assassin's Creed* franchise might adhere to a more realistic gravity representation. The types of music include, but are not limited to, underscoring the mood and indicating success. For the analysis of these games I will be drawing upon my own experience with these games as well as experiences that players have shared online in order to form conclusions on game musical immersion.

In the following chapters I will be exploring musical immersion in video games with the aim to propose a definition that combines the models by Ermi and Mäyrä, and van Elferen with Csikszentmihalyi's theory of flow. Examples from video games will be used to show how these different theories correlate to one another and how they can be combined to form a definition of musical immersion in video games.

Flow

This chapter will cover the theory of flow as Mihaly Csikszentmihalyi described it. I shall argue that the theory of flow is an overarching concept of video game immersion and immersion in general. I begin with a brief overview of this theory followed by a discussion of how it ties into the SCI-model by Ermi and Mäyrä, and the ALI-model as proposed by Isabella van Elferen.

Csikszentmihalyi describes the “optimal experience”, or flow, as a state where a person is completely engrossed by their activity.¹² Flow is a concept that is closely related to video game immersion as described by Laura Ermi and Frans Mäyrä. Csikszentmihalyi often gives examples of making music, playing sports, or reading a good novel.¹³ Csikszentmihalyi proposes that the concept applies to games as well, although he only writes about physical games such as chess.¹⁴ To achieve this optimal experience of flow, an activity must meet a few conditions. The activity must provide a level of challenge that is great enough to be enjoyable but not so much that it becomes too difficult.¹⁵ Moreover, the subject has to become engrossed with the activity to the point that actions are performed almost automatically, so that all attention is focused on the activity.¹⁶ According to Csikszentmihalyi this can be achieved because flow activities have clear goals and deliver immediate feedback.¹⁷ For example when playing soccer the obvious objective is to score in the opponent’s goal and accumulate as much points as possible to win the game. The feedback that is delivered expresses itself in your team’s ability to advance in the opponent’s territory and get closer to the goal keeper. The other conditions for the optimal experience are on a cerebral level.

¹² Csikszentmihalyi, *Flow: The psychology of optimal experience*, 43-70.

¹³ Csikszentmihalyi, 71-93.

¹⁴ Csikszentmihalyi, 71-93.

¹⁵ Csikszentmihalyi, 49-67.

¹⁶ Csikszentmihalyi, 49-67.

¹⁷ Csikszentmihalyi, 49-67.

Concentration needs to be focused towards the activity, a sense of control needs to be felt, a loss of self-consciousness occurs, and time appears to move at a different pace.¹⁸

Much like the physical games and other activities that Csikszentmihalyi described, digital games also exhibit the same characteristics necessary to have the optimal experience of flow. Every video game is bound by rules set by the game's developers in the code. Goals are often presented in the form of quests that players have to complete. Immediate feedback is given by sounds playing or in written text. And the player has control over the character, or other elements on the screen, that are shown.

In games, the rules may not always be apparent but players are limited by what programmers allow them to do. For example, in *Pokémon* games players could for the longest time only move in cardinal directions on a grid, with ordinal movement added in a later generation. Clear goals in games may present themselves in the form of quests in games such as the *Legend of Zelda*, *World of Warcraft*, and *Grand Theft Auto*. Goals also appear in more subtle ways in games such as *Pokémon* where players have to follow a set storyline to accomplish their goal "to be the very best [Pokémon trainer], like no one ever was."¹⁹ The rest of the conditions for flow to occur then depend on the player's emotional and mental investment in the game.

Video game immersion is often described as the state where a player loses a sense of reality and becomes engrossed in the digital world that is presented. This definition looks very similar to the description of Csikszentmihalyi's theory of flow. Only the video game immersion is focused towards only video games whereas Csikszentmihalyi describes a more universal experience that can be applied to multiple activities. Michailidis et al. argue that the terms flow and im-

¹⁸ Csikszentmihalyi, *Flow: The psychology of optimal experience*, 49-67.

¹⁹ Jason Paige, *Gotta Catch 'Em All* (New York: Koch Records, 1999).

mersion can be used interchangeably and that existing literature hints towards this fact.²⁰ Nonetheless, current literature mostly implies a clear distinction between flow and immersion, but the differences are often disputed.²¹ One can argue that video game immersion does not meet the requirements of a flow experience. These requirements for flow however, are based on the most occurring answers subjects gave in interviews and questionnaires.²² Therefore, these conditions are not set, but offer a guideline to which one can measure flow. This is also in line with Ermi and Mäyrä's research, who claim that video game immersion differs from experience to experience. The following chapters will further show that Csikszentmihalyi's optimal experience can be seen as an overarching theory of video game immersion and that the SCI-model and the ALI-model provide a structuring framework for video game immersion research.

Music is mentioned multiple times with regards to flow experiences in Csikszentmihalyi's research. Csikszentmihalyi does however limit his research to performing music as a flow experience, and does not mention the act of listening to music. But how does Csikszentmihalyi's theory of flow relate to music in video games? Music in video games can both be listened to, but some elements of performance may also be found. Tim Summers describes the musical instrument qualities that can be found in some Nintendo games for example.²³ This quality can be explained by the direct influence that players can have on the music and sounds of a game. Summers mentions the rising glissando that is used in the *Super Mario Bros.* games when the main character Mario jumps.²⁴ Because this sound

²⁰ Lazaros Michailidis, Emili Balaguer-Ballester, and Xun He, "Flow and Immersion in Video Games: The Aftermath of a Conceptual Challenge," *Frontiers in Psychology* 9 (2018): 5, <https://doi.org/10.3389/fpsyg.2018.01682>.

²¹ Michailidis, Balaguer-Ballester, and He, 5.

²² Csikszentmihalyi, *Flow: The psychology of optimal experience*, 45-48.

²³ Tim Summers and James Hannigan, "Musical Play and Video Games," in *Understanding Video Game Music* (Cambridge: Cambridge University Press, 2016), 192-198, <https://doi.org/10.1017/CBO9781316337851.009>.

²⁴ Summers and Hannigan, 192-198.

is only heard when the player presses the jump button it can be argued that the video game shows musical instrument qualities.²⁵

However, listening to the video game's music is also an important endeavor because it can help set the scene without the player's intervention. I will argue here that listening to music in video games can also be viewed as a flow experience. As mentioned before, the requirements for the optimal experience as described by Csikszentmihalyi are based on qualitative research.²⁶ One could question what the goal is when listening to music. However, in video games the music is not an individual actor but is influenced by the other modalities of the video game medium. In video games the goals are often set by the use of so called quests or other objectives. These can then subsequently be guided, and even confirmed, by the music. One can see a clear example of this in the *Legend of Zelda* franchise where musical elements are employed to confirm to the player that they are on the right track of completing a puzzle.

In the rest of this thesis I will be considering flow as an overarching theory of video game immersion. Meaning that I will be using Csikszentmihalyi's theory flow to analyze the different modes of immersion in video games. The next chapter will show how the SCI-model by Ermi and Mäyrä helps structure the complexity of video games and research of immersion. Video games are inherently complex because they address multiple modalities. The SCI-model distinguishes three dimensions of video game immersion which allows research to aim attention at video game aspects that are most relevant to their application.

²⁵ Summers and Hannigan, "Musical Play and Video Games," 192-198.

²⁶ Csikszentmihalyi, *Flow: The psychology of optimal experience*, 45-48.

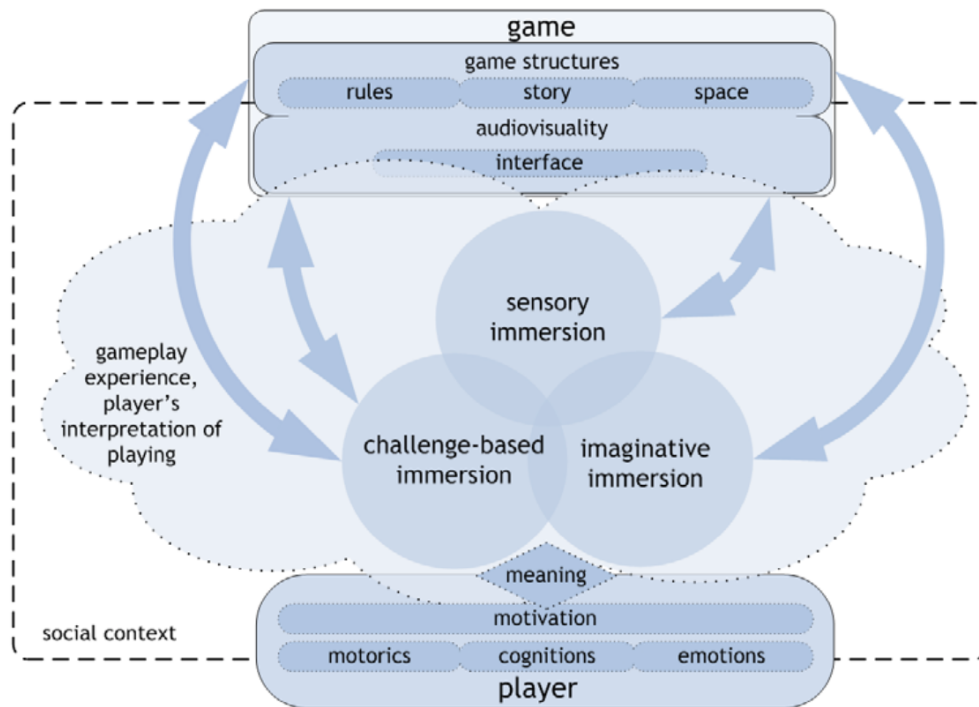


Figure 1: The SCI-model as presented by Laura Ermi and Frans Mäyrä.²⁷

SCI-model

In this chapter I will be covering the SCI-model as presented by Laura Ermi and Frans Mäyrä (see figure 1), and how it relates to musical immersion in video games. I begin with the components that make up the SCI-model, followed by a discussion of how game musical immersion ties into this model.

The SCI-model by Ermi and Mäyrä identifies three dimensions of video game immersion: sensory, challenge-based, and imaginative. The first dimension, sensory immersion, describes the audiovisual experience of the player and can most often be identified by laymen and those without video game experience.²⁸ One can, for example, easily recognize how video games can overwhelm a player's

²⁷ Ermi and Mäyrä, "Fundamental Components of the Gameplay Experience: Analysing Immersion", 8.

²⁸ Ermi and Mäyrä, 7-9.

senses with stunning visuals and captivating sound.²⁹ Challenge-based immersion is defined as the feeling of immersion when the player finds balance in the challenges presented to them.³⁰ A player should be challenged enough to stay engaged, but not so much that they want to give up easily. Finally, imaginative immersion occurs when the player becomes engrossed in the stories of the game world and identifies with a game character.³¹ Just as one would in for example a great novel, or a good movie. It should however be noted that the experience is temporal and that these three dimensions are centered around each individual player.³² Moreover, the experience is subject to outside factors such as peer influence and sociocultural references as well.³³

Ermi and Mäyrä also consider each game and player as their own entity. This means that the experience differs not only from game to game, but from player to player as well. The meaning of the game that the player construes is heavily subject to outside influence. One's upbringing, friends, or even online reviews lead the player in a certain direction. Gameplay in this model is represented as the interaction between the game, the player, and these outside factors.³⁴ The model is not meant to be used for a comprehensive analysis, but rather to guide researchers' focus.

The SCI-model is not a complete model and does not capture the full complexity of video games.³⁵ It does however provide structure for further analysis. By distilling the sensory, challenge-based, and imaginative immersion dimensions from a video game this model affords for a more targeted approach in video game

²⁹ Ermi and Mäyrä, "Fundamental Components of the Gameplay Experience: Analysing Immersion," 7-9.

³⁰ Ermi and Mäyrä, 7-9.

³¹ Ermi and Mäyrä, 7-9.

³² Ermi and Mäyrä, 7-9.

³³ Ermi and Mäyrä, 7-9.

³⁴ Ermi and Mäyrä, 1-3.

³⁵ Ermi and Mäyrä, 12.

analysis. One can tackle the three dimensions separately and combine their analyses later to form a broader picture of a video game. However, video games are far more complex than the sum of their parts.³⁶ But after combining these analyses further research can then be more focused on outside factors and interplay between dimensions. Still, for the purposes of this thesis I am most interested in the sensory dimension, where Ermi and Mäyrä place game musical immersion. Van Elferen disputes this claim and argues that there are also examples of game musical immersion found in the other dimensions.³⁷ This claim will be further discussed in the next chapter.

Music, or sound in general, is often very important in conveying that the player is directly influencing the digital environment. Sound can confirm that the player is headed in the right direction or that something exciting or frightening is about to happen. For example in the *Legend of Zelda* series the same melody is played every time a player completes a puzzle to confirm that they had the right solution. And in many other games the tone of the music suddenly changes when an enemy is nearby, warning the player they should be prepared to fight.

As a result of distilling a video game into three core dimensions, the analysis of this complex medium becomes less daunting. For further analysis one must then look towards another model to explain the dimension in question. Isabella van Elferen proposed a model for the analysis of musical immersion, the ALI-model which takes musical affect, literacy and interaction into consideration.

³⁶ Ermi and Mäyrä, "Fundamental Components of the Gameplay Experience: Analysing Immersion," 7-9.

³⁷ Van Elferen, "The ALI Model: Towards A Theory of Game Musical Immersion," 1-3.

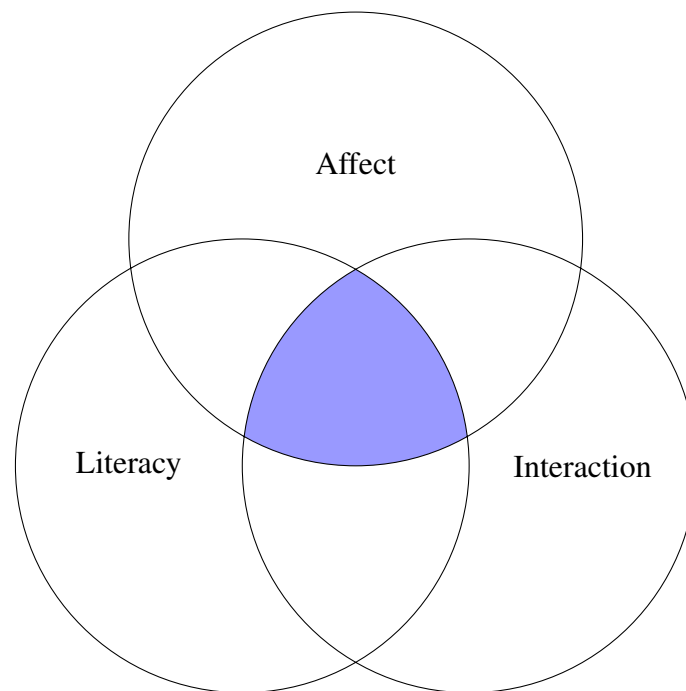


Figure 2: A schematic representation of van Elferen's ALI-model.

ALI-model

In this chapter I will explore van Elferen's ALI-model (see figure 2), and how it can be united with the SCI-model that was discussed in the previous chapter to form a better understanding of game musical immersion. I will start with a brief overview of the model, followed by an exploration of the three dimensions van Elferen defined. I then continue with a discussion of the link between the ALI-model and the previously discussed theories and how they can be unified. The chapter is concluded with a discussion of game musical immersion as a concept.

Similar to the SCI-model, van Elferen has also distinguished three dimensions in this model: affect, literacy, and interaction. However, in contrast to the SCI-model, the ALI-model is focused solely on musical immersion in video games. Van Elferen argues that game musical immersion is most optimal where the three

dimensions overlap. There still appears to be a lack of academic consensus regarding the definition of game musical immersion.³⁸ Nonetheless, I will argue that this definition can be found by uniting the ALI-model and SCI-model. Van Elferen does mention the SCI-model, but criticizes Ermi and Mäyrä for placing the sonic aspects of video game immersion solely in the sensory dimension.³⁹ As I argued before, there is validity to both claims. However, I believe that the models can be unified to form more comprehensive analyses.

Musical Affect

The musical affect dimension describes musical meanings the individual player, or the collective of players, create that can be attributed to the music.⁴⁰ Van Elferen argues that game musical affect is most apparent in horror genre games such as the *Silent Hill* franchise, or the *Resident Evil* games.⁴¹ This genre, much like the movie genre, revolves around evoking emotion in its audience. In the case of the horror genre, music can lead to more vivid experiences by emphasizing the player's sense of danger. Much of this can be attributed to a person's musical literacy.

Musical Literacy

Musical literacy is similar to reading/writing literacy in the sense that one is able to pick up certain patterns in sound, in this case music. People respond to sounds and patterns that are familiar to them. By reusing musical elements that were previously used to induce the feeling that a composer is trying to convey. This type of communication can however only work if the transmitter and the receiver

³⁸ Van Elferen, "The ALI Model: Towards A Theory of Game Musical Immersion," 1.

³⁹ Van Elferen, 1.

⁴⁰ Van Elferen, 6-7.

⁴¹ Van Elferen, 6-7.

are both familiar with the same musical signs.⁴² In the case of video games, for the player to experience the music in the way that the composer intended the player must be familiar with the signs used by the composer. The way that meaning gets constructed in music is also similar to how meaning is constructed in television. Ronald Rodman, a television scientist, wrote the following: “In order to shape meaning, television must convey its message to its audience, but the audience must also be able to read and decode that message into meaningful units.”⁴³ The meaning that is connected to these units are then largely formed by dominant cultures.⁴⁴

These units, or musical patterns, can be as small as a singular interval but other musical building blocks can fulfill the same function. For example, the rising perfect fourth interval is often connected to boldness and heroism.⁴⁵ Video game music composers can use this interval, or code as Fiske describes it, to convey the heroism of the character on screen for example.⁴⁶ Another way that musical codes are used in video games can be found in horror games. Where a composer might choose to not fully resolve their melodies to sustain tension. Entire musical pieces can also serve the role of a musical code. Edvard Grieg’s *Morgenstimmung* for example is often used in popular media to signify the morning.

⁴² Philip Tagg, *Music’s Meanings: a modern musicology for non-musos* (Larchmont, NY: The Mass Media Music Scholars’ Press, 2012), 155-194.

⁴³ Ronald Rodman, “Toward an Associative Theory of Television Music,” in *Tuning In: American Narrative Television Music* (New York: Oxford University Press, 2009), 8, <https://doi.org/10.1093/acprof:oso/9780195340242.003.0002>.

⁴⁴ Rodman, 8.

⁴⁵ Rodman, 17.

⁴⁶ Rodman, 8-9.

Musical Interaction

Musical interaction in video games manifests in the form of the player directly influencing the game's soundtrack by their own actions. This is often achieved by sounds that establish the legitimacy of the game environment. A good example is the iconic jump sound in the original *Super Mario Bros.* games. In these games a small glissando is heard every time the player jumps, which confirms their action. This type of interaction happens in most, if not all, video games. Music interaction can also be found in games such as *Guitar Hero* where players are presented with an instrument-like interface and controller. In this type of game, players simulate playing an instrument which is validated by the sound playing and stopping when hitting or missing the correct buttons respectively. A third type of interaction can be found on a subconscious level. Video games often guide the player in the right direction with the use of music. In the platforming game *Celeste* for example, the music is very well adapted to the environments. The music in this game is changed based on the part of the level that the player is in. This affords the player to judge how they should tackle this part of the level. This type of musical guidance can be found in many other games as well. Even in first person shooter games sound proves to be of importance. Stereo sounds allow the player to have an indication of where their enemy is before being able to see them. Van Elferen also hints towards this fact, playfully calling it a musical GPS.⁴⁷ According to van Elferen this musical GPS is not only navigational but affective as well.⁴⁸ Music can both help you traverse the game world but can also guide your emotions and feelings.

⁴⁷ Isabella van Elferen, "¡Un Forastero! Issues of Virtuality and Diegesis in Videogame Music," *Music and the Moving Image* 4, no. 2 (2011): 34, <http://www.jstor.org/stable/10.5406/musimoviimag.4.2.0030>.

⁴⁸ Van Elferen, 34.

Van Elferen argues that game musical immersion is found across all dimensions of the SCI-model.⁴⁹ The musical immersion of games like *Guitar Hero*, *Rock Band*, and *Rocksmith* take place in the challenged-based immersion dimension.⁵⁰ And the music in games such as *World of Warcraft* or *Legend of Zelda* should be placed in the imaginative category. While I do agree with van Elferen that the musical gameplay of these titles do exhibit traits of the other dimensions, I shall argue in the next section that game musical immersion should be considered to be a subset of sensory immersion. The examples that van Elferen present are not conclusive enough to show that musical immersion appears across multiple dimensions of the SCI-model. These examples merely show that music influences the experience of immersion in these areas. However, in these cases music appears to be more of a guide than its own sensation. The dimensions defined by Ermi and Mäyrä should first be analyzed as separate entities and later combined to analyze the interplay between dimensions. There is always a claim to be made that elements should be classified differently. I argue that this is due to an interplay between dimensions that is difficult to analyze without first exploring its core mechanics. By exploring the sensory, challenge-based, and imaginative dimensions separately first, the analysis of the interplay between dimensions becomes more structured.

Musical Immersion

Van Elferen argues that musical immersion is most optimal when the three dimensions of her model overlap. In this section I shall argue that this space where musical affect, literacy, and interactivity overlap indicates not only musical immersion but also optimal musical guidance. This model gives researchers the tools to analyze how music guides players towards an experience of flow or immersion.

⁴⁹ Van Elferen, "The ALI Model: Towards A Theory of Game Musical Immersion," 1-3.

⁵⁰ Van Elferen, 1-3.

I shall however argue in this chapter that this model has an alternative use as well.

The ALI-model van Elferen defined, can be applied to all dimensions of the SCI-model. However, the ALI-model appears to imply something different in the challenge-based and imaginative immersion dimensions. In this case the ALI-model implies optimal musical guidance and not musical immersion. This fact is well illustrated by the *Guitar Hero* example mentioned in the previous section. Here music acts as a guide that balances the challenge in the game. Without sound the game is still playable, but it becomes more difficult because the player is no longer guided in their timing of button presses. A similar phenomenon can be found in *The Legend of Zelda: Breath of the Wild* where fighting enemies can be difficult at times. However, as someone pointed out when I was streaming this game to the online video game streaming platform twitch.tv, “You should just focus on the sound not on the visuals,” and “It’s a matter of practice and getting a feel for it,” when I was struggling with the timing of my attacks and dodge maneuvers.⁵¹ One can of course base their timing on the visual cues presented by these games. Nevertheless, music acts as a useful guide in these situations.

Musical immersion in video games operates in the sensory dimension of the SCI-model by Ermi and Mäyrä and can be analyzed using the ALI-model by van Elferen. The act of listening and interacting with the game’s music should be seen as a flow activity where goals are set by the game, and the other requirements are afforded by the music. Furthermore, it should again be mentioned that the requirements for a flow activity are based on qualitative research and are therefore not set in stone.⁵² These requirements were formulated based on the most occurring answers subjects gave when asked about their experience.⁵³ The act of listening

⁵¹ snugglybee_buzz, “Op zoek naar shrines!,” 1:09:00-1:09:35, Twitch.tv Chat Message, accessed November 10, 2020, <https://www.twitch.tv/videos/798104223>.

⁵² Michailidis, Balaguer-Ballester, and He, “Flow and Immersion in Video Games: The Aftermath of a Conceptual Challenge.” 1.

⁵³ Csikszentmihalyi, *Flow: The psychology of optimal experience*, 45-48.

to music might not fulfill all the conditions that Csikszentmihalyi defined, but this theory should still be considered when looking at video game immersion. Even when one considers that all requirements that were defined in Csikszentmihalyi's research are essential to reach the optimal experience, the complexity of the video game medium affords these to be fulfilled as well. This interplay between the modalities concerned with video games should be considered when researching immersion in video games.

Conclusion

In this thesis I have aimed to unite Isabella van Elferen's ALI-model and idea of musical immersion with Csikszentmihalyi's theory of flow and the SCI-model of video game immersion by Ermi and Mäyrä. To achieve this I have first explored the three theories separately and have subsequently combined their analyses.

There still appears to be a lack of academic consensus on the topic of immersion. However, recent study by Michailidis et al. shows that there is no clear distinction to be found between immersion and flow.⁵⁴ The requirements proposed by Mihaly Csikszentmihalyi can not always be met in video game immersion. But, these conditions were based on the answers that appeared most often in a qualitative research on flow experiences.⁵⁵ Csikszentmihalyi's theory of flow proves to be useful in analyzing video game immersion.

The SCI-model is used to give structure to the complexity of video games by separating it into three distinct categories. Ermi and Mäyrä place musical immersion in the sensory dimension of their model and I have argued that it should stay classified as sensory immersion contrary to Isabella van Elferen's claim.⁵⁶ The examples van Elferen showed against this claim are not conclusive enough to show that musical immersion happens outside the sensory dimension. Nonetheless, music does have an important function in challenge-based and imaginative immersion.

After separating video game structures into the sensory, challenge-based, and imaginative immersion dimensions the ALI-model can be used to analyze musical immersion. I have also proposed the use of the ALI-model in the analysis of the other immersion dimensions to determine an optimal musical guidance which

⁵⁴ Michailidis, Balaguer-Ballester, and He, "Flow and Immersion in Video Games: The Aftermath of a Conceptual Challenge.," 4-5.

⁵⁵ Csikszentmihalyi, *Flow: The psychology of optimal experience*, 43-70.

⁵⁶ Van Elferen, "The ALI Model: Towards A Theory of Game Musical Immersion," 1-3.

affords the player to achieve an experience of flow.

I propose that game musical immersion should be defined as a flow state where goals are set by the video game, and other conditions for flow are an affordance of the music. However, more research is still necessary on the implications of the ALI-model. An academic consensus has yet to be found, but I hope to have showed how these theories can be united.

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