

Music Video Games in Live Performance: Catachresis or an emergent approach?

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ABSTRACT

This paper argues that music video games, given the characteristics of the genre, may constitute an alternative and viable approach to music and audiovisual performance. Building on a music performance in 2013, in which the author participated and used a video game as a musical instrument, we analyze some of the aspects that have emerged and support our argument. We contextualize video games within new media art and provide a brief analysis of the music video game genre. We also identify some of the latest research efforts concerning conceptual and technical approaches, design features and frameworks that may assist the analysis and development of music video games suitable for performance.

Author Keywords

Music video games; computer-based performance; interactive audiovisuals, new media art.

ACM Classification Keywords

J.5. Arts and humanities: Performing Arts (Music)

INTRODUCTION

While mainstream video games have emerged to conquer an important place in the media economy, some niche games have achieved the status of artworks. Amidst these games, and recognized as meaningful art games, are *Painstation* [18] by Morawe and Reiff, *Super Mario Clouds* [1] by Cory Archangel, *Fijuu* [19] by Julian Oliver, and *ElectroPlankton* [20] by Toshio Iwai. In fact, in the last decade there were many contributors to the discussion about whether video games are art or not. Among them, was Henry Jenkins who argued ‘games represent a new lively art, one as appropriate for the digital age as those earlier media were for the machine age. They open up new aesthetic experiences and transform the computer screen into a realm of experimentation and innovation that is

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broadly accessible. And games have been embraced by a public that has otherwise been unimpressed by much of what passes for digital art’ [7].

In ‘Digital Art’, Christiane Paul provides a survey of digital art from its inception in the 1980s until the present. According to the author, digital art is a genre that encompasses artistic works and practices that use digital technology as part of the creative process, and/or as the presentation medium, being “placed under the larger umbrella term ‘new media art’” [13]. New media art is in turn a general term that refers to artwork forms like film, video, sound art and their hybrids, and that differentiates from cultural objects deriving from the traditional visual arts like painting and sculpting.

Pichlmair situates game art within media art genre. He refers to its general artistic premises as those pushing the boundaries of the medium, by “altering the view on video game culture, liberating digital games from solely being a form competitive entertainment, and creating a unique experience opposing or at least complementing the plethora of mass-manufactured entertainment products” [14].

The research for this paper is driven by these artistic premises and builds upon a phenomenological approach to the use of a music video game as a hyperinstrument for audiovisual performance. It makes its inception from a laptop performance in which the author participated, and that consisted of an exercise of catachresis, in the extent to which a video game was used as a musical instrument.

This paper is structured in six sections. This introduction attempts to situate video games in the new media art genre. The second section makes an incursion into the domain of video games, focusing on the aspects surrounding how music is used. The third section contextualizes research work around computer-based performance and composition. The fourth section describes the settings of the experience that served as starting point for our empirical study and the findings that emerged from it. The fifth section discusses the overall findings, and the last chapter concludes with directions for future work.

CONTEXTUALIZING MUSIC IN VIDEO GAMES

Musicality is an inherent characteristic of video games, and one can find distinct in-game aural elements that fall either in music or sound. According to Whalen, video game music is defined as “the parts of the soundtrack that are pre-

composed and recorded for playback to accompany specific locations or events in the game” [16]. The author refers to video game sound as individual sound effects triggered by micro-level interactions within the game.

The music video games genre

According to Berndt, music video games had its origins in the aesthetics of music video clips [2]. While sound and music are most typical elements in almost every game, the music video games are one specific subgenre characterized by direct player interaction with music. There, correspondences between aural and visual elements attain the most interesting and complex levels. Kayali situates music games as interactive applications at the intersection of digital games, media art, and musical instruments [8]. Although this genre is considered to have emerged in the 1970s, it reached the mainstream attention more recently with market successes such as *Guitar Hero* [21] or *Sing Star* [22]

There is a significant divergence of types of music video games and taxonomy proposals seem to abound. In general, these taxonomies encompass music games in categories such as music memory games, free-form music games, hybrid music games, mixed-genre games and music games for concert performance.

Music memory games are a broad category that gathers several subcategories such as rhythm games, pitch games and eidetic games. These games test the short-term and the eidetic musical memory of the player, and their goal is to provide a response to prompts that occur in the game. *Guitar Hero* [21] or *Sing Star* [22] are two examples of this subgenre.

Hybrid music games are also characterized by the combination of interactions between the player and the game music, but with in-game elements, dynamics and goals characteristic from other non-musical game genres, such as platformers and shooters. *Rez HD* [11] and *Child of Eden* [12] are shooters that implement an extensive array of music interaction features.

Music games for concert performance are intended for live musical performance in concert venues with possible accompaniment and projection of the gameplay for audience viewing. *Etude n.9* is a game developed by The Anigraphical Etudes [23] for live classical flute player.

Research in music and video games

Research efforts around the video games have been sustaining an ever-growing evolution, and specific research in music within this specific media has been growing since the last decade. Liebe proposes three different categories related to the way which music and gameplay are interlinked: linear, reactive and proactive [9]. He describes linear music as that which cannot be influenced by the players, and coupled to certain in-game elements, such as game areas and levels. Reactive music is referred to as that

which is directly associated and triggered to the actions of the player during gameplay. Proactive music prompts the players to undertake a specific action when it is played, reinforcing a certain gameplay situation. Pichlmair and Kayali propose a set of music interaction features to be considered in the design of music video games: active scores, rhythm action, quantisation, synesthesia, play as performance, free-form play, and sound agents [14]. Collins provides an overview of the technologies and development process of video game music, namely approaches to procedural composition and control based on transformational and generative algorithms [5]. Brown and Kerr characterize the elements of adaptive music systems in video games and interactive artworks, and discuss a set of algorithmic techniques typically implemented in these systems such as harmonic templates, abstraction, recombination, probability, and transformation [3]. Wroten proposes a framework for analyzing and discussing the various types of player-music interaction that may occur in all styles and genres of games [17]. His framework contemplates seven types of player-music interaction: filtered-preferential, cinematic-narrative, cinematic-situational, rhythm-pattern, triggered-incidental, freeform-representational, and enqueued-incidental.

COMPUTER-BASED MUSIC PERFORMANCE

Looking back into contemporary music studies, one finds several lines of research related to computer-based music composition and performance. Their roots stem from the work of Cage and Chadabe. Cage was a pioneer in the exploration of new models of composition, using random processes to automate musical decisions. He opened the way for algorithmic composition, a tradition carried on by later composers such as Koenig and Xenakis, among others. Contemporary algorithmic composition includes the exploration of chaotic equations and fractals, cellular automata, genetic algorithms, many of which are now being explored in live performance [6] and in video games (see section 2.2).

Chadabe introduced interactive composing, “a mutually influential relationship between performer and instrument” [4], based on the principle of superseding the one-gesture-to-one-note relationship, characteristic of traditional instruments. Machover coined the term hyperinstrument, using it to define tools that combine the traditional roles of the performer and composer with the computational power of the machine [10]. Machover describes hyperinstruments as unconventional computer-based instruments that support unconventional musical gestures, and that assist the goal of producing ‘music of unprecedented subtlety, complexity, richness and expressive powers [10]. Hyperinstruments embed the interactive composing principle, maintaining the musical gesture for transmitting the musical intuition throughout the system. Several outcomes emerged from this line of research, among them the well-acclaimed *Guitar Hero*, one of the landmarks of music video games.

USING 'KYOTO' IN AN AUDIOVISUAL PERFORMANCE

Catachresis is a term that has its origins in linguistics and rhetoric, and refers to a figure of speech associated to the use of a word in a different way from the normal meaning. It can also be applied to describe when people use an object in a different way than the one for what it was primarily designed. Here, we borrow this term to apply it to the use of video games as performing instruments for live audiovisuals.

In 2013, this author integrated a collective of laptop performers called FVLC (Formação Variável de Laptops do C.I.T.A.R) that participated in an artistic event that took place in the School of Arts of the Portuguese Catholic University during the Christmas festivities. A characteristic of this particular event was the technological and improvisational nature of the performance.

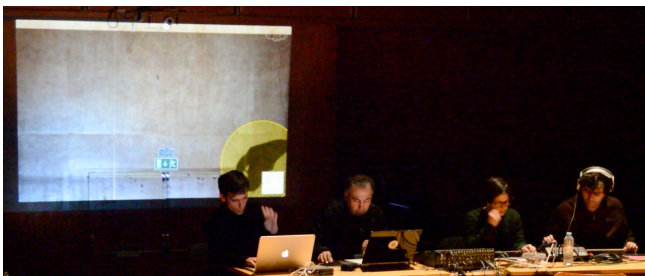


Figure 1. FVLC laptop performance

Each element of the collective had its own innovative approach to music performance, i.e., using mobile music apps in tablets, custom-made sound generating hardware, a fish-driven instrument named FuXi (Cordeiro, 2014), etc. This author and performer assumed the challenge as an exercise of catachresis, playing in the music ensemble using a Leap Motion controlled music video game called Kyoto by Funktronic Labs [24].

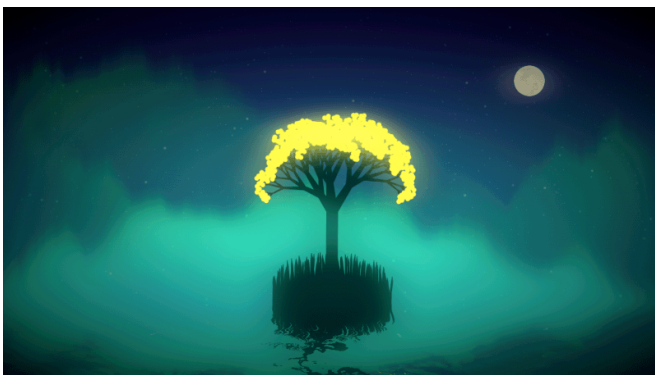


Figure 2. Kyoto's interface by Funktronic Labs [24]

Kyoto is a game described by its author as 'an interactive ambient musical experiment ... sweet game ... half audioreactive experiment and half tech sandbox' [24]. In

Kyoto, the player interacts with a visual composition comprised of a luminous tree embedded in a celestial and moonlit river landscape. One can shake the blossomed tree, its branches, scrub through the grass, wave the hand through the water, and grab the comets that fly by. Most of these elements are sound agents that react to the virtual controller action by issuing notes played that add up to a calm, relaxing tone. Other interactive elements gradually appear during game progression such as flying comets, aurora borealis, lanterns and torches, which affect the music, by changing its tone, or introducing new sounds like string plucking, and build the overall game soundscape. The visual output of the game was reserved for the performer, and the game was played using the Leap Motion controller, which together with the game's interaction design provided a realistic 'grabbing' feel.

Kyoto's game play generated an audio layer that was added up to the general mix, along with the audio signal of the other ensemble elements. Electronic ambient textures and pad layers characterized the overall sound. During the performance, as the sound dynamics of the ensemble evolved, also did the Kyoto gameplay, jumping up level after level and unveiling new instruments and sounds. This was not the only interesting feature that serendipitously emerged from the experience. It also allowed the realization of how the evolution of the game narrative blended so well with the overall performance that it could provide a strong contribute to the visual component of a future performance. Moreover, the metaphors used in the game for the sound agents provided for an exquisite organization and intuitive association of the set of available sounds to play. Following this event, the author engaged with elements of the audience in order to gather feedback about the performance. In general, people manifested having a good experience with the performance. There were remarks that acknowledged a positive correspondence between the gestures and the sound generated using Kyoto. Most people showed surprise after hearing that a video game was behind the sounds that they associated to the author's performance.

DISCUSSION

Through catachresis, the original purpose of the game was abolished in favor of a new one. This can be scrutinized under distinct perspectives. On one hand, this could be seen as one out of many instances of deviant and inconsequent appropriation. On the other hand, one can observe it in the light of Eco's aesthetics of the open work and death of the authorial intent. From the game designer's point of view, the game's ultimate goal was for the player to reach its end. However, here the performer appropriates it as an instrument for the performance, and the audience experiences it as performance, leading to the emergence of the new artwork, the performance, over the old one, the video game.

In another frame of analysis, one can inspect the apparent intersection between two independent fields, music video

games and contemporary music composition and performance. In fact, the techniques that emerged from contemporary music and performance, such as algorithmic composition are being increasingly used in video games. In the author's opinion, this extends beyond simple intersection; it is, in fact, the convergence of emerging trends in different fields, based on two important common attributes: computation and interactivity.

The performance also raised issues that are worthy of analysis, and particularly relevant to someone with a background or experience in audiovisual and music performances. The approach that was undertaken seemed to address two fundamental issues that live visual artists usually face. Firstly, there is the need to generate a significant amount of audiovisual material, in order to support long performances and avoid repetition. Using a video game may assist on this issue, by providing sufficient material in a dynamic fashion. However, this depends of the game's generative capabilities, complexity, variability and degree of interactivity. Secondly, a problem that many visual performances seem to suffer from is the lack of narrative, being mostly comprised of more-or-less arbitrarily sequenced elements of footage. The typical consequence is the lack of engagement with the audience. In this case, a consequence of using a video game in live visuals is that the game will 'lend' its narrative to the performance, and provide a more enticing and engaging experience.

CONCLUSION AND FUTURE WORK

What begun as an exercise of catachresis, led to the recognition of the strong convergence between the fields of contemporary music and music video games. The fact that techniques of interactive music composition and performance are common to both domains may entail further closure and potentiate the emergence of novel forms of appropriation. The exercise also brought interesting insights concerning the video games as potential instrument for full audiovisual performance. Therefore, this experience brought the motivation for further explorations, in the direction pointed by the initial intuition. Future work comprehends following the same premise in the design and implementation of a music video game, informed by the theoretical and empirical insights obtained from this work.

REFERENCES

- Arcangel, C. Super Mario Clouds. 2002. <http://www.coryarcangel.com/things-i-made/supermarioclouds/>.
- Berndt, A. Diegetic Music: New Interactive Experiences. In M. Grimshaw, ed., *Game sound technology and player interaction: concepts and developments*. 2011.
- Brown, A.R. and Kerr, T. Adaptive Music Techniques. *Improvise: The Australasian Computer Music Conference*, (2009), 26–31.
- Chadabe, J. Interactive Composing: An Overview. *Computer Music Journal* 8, 1 (1984).
- Collins, K. An Introduction to Procedural Music in Video Games. *Contemporary Music Review* 28, 1 (2009), 5–15.
- Eigenfeldt, A. Real-time Composition or Computer Improvisation? A composer's search for intelligent tools in interactive computer music. *Electroacoustic Music Studies Network*, (2007).
- Jenkins, H. Games, the New Lively Art. In J. Hartley, ed., *Creative Industries*. Blackwell Publishing, London, 2005, 312–327.
- Kayali, F. Playing Music: Design, Theory, and Practice of Music-based Games. 2008.
- Liebe, M. Interactivity and Music in Computer Games. *Music and Game*, (2013).
- Machover, T. *Hyperinstruments - A Progress Report*. MIT Media Laboratory, Massachusetts Institute of Technology, 1992.
- Mizuguchi, T. Rez HD. *Q Entertainment Inc.*, 2008. http://www.qentertainment.com/eng/2007/09/rez_hd.html.
- Mizuguchi, T. Child of Eden. *Ubisoft*, 2011. <http://child-of-eden.us.ubi.com/>.
- Paul, C. *Digital Art*. Thames and Hudson, London, 2008.
- Pichlmair, M. and Kayali, F. Levels of Sound : On the Principles of Interactivity in Music Video Games. *Situated Play, Proceedings of DiGRA 2007 Conference*, (2007), 424–430.
- Pichlmair, M. Electroplankton revisited: A Meta-Review. *Eludamos - Journal for Computer Game Culture* 1, 1 (2007).
- Whalen, Z. Play Along - An Approach to Videogame Music. *The International Journal of Computer Game Research* 4, 1 (2004).
- Wroten, A. Developing Musical Video Games Through Principles of Player-Music Interaction. 2011, 137.
- PainStation. 2001. <http://www.painstation.de/index.html>.
- Fijuu. 2004. <http://www.fijuu.com/>.
- Nintendo.com – Electroplankton Hanenbow – Game Info. 2005.

<http://www.nintendo.com/games/detail/B4QgT8uckp1VMV3wlDQwPSWeFA1lBbr7>.

21. Guitar Hero. 2005. <http://www.guitarhero.com/>.

22. Sing Star. 2010. <http://www.singstar.com/>.

23. The Anigraphical Etudes. *Intel*, 2011. <http://software.intel.com/en-us/videos/intel->

[software-partner-program-member-the-anigraphical-etudes](#).

24. Kyoto. 2013. <http://funktroniclabs.com/kyoto>.