

Gamified Audiovisual Works – Composition, Perception, Performance

Marko Ciciliani, Barbara Lüneburg
IEM – Institute of Electronic Music and Acoustics
University of Music and Performing Arts Graz
{marko.ciciliani, barbara.lueneburg}@kug.ac.at

Abstract

The inclusion of elements from games and especially from computer games in audiovisual works carries large artistic potentials and challenges. Since February 2016 Marko Ciciliani has run an artistic research project at the IEM – Institute of Electronic Music and Acoustics of the University of Music and Performing Arts Graz, where he, together with performer and artistic researcher Barbara Lüneburg and musicologist Andreas Pirchner, has investigated various possibilities of utilizing elements from games in the context of audiovisual works. The project is titled GAPPP, which stands for 'Gamified Audiovisual Performance and Performance Practice'. So far, nine new works by six artists have been composed and investigated as part of this project. As we are approximately mid-term into the project, this paper summarizes various experiences and insights that have accumulated since the project started.

1. Introduction – Research Design

The project GAPPP – *Gamified Audiovisual Performance and Performance Practice* comprises a team of three researchers consisting of Dr. Barbara Lüneburg (violin and artistic research), Andreas Pirchner (musicology) and Dr. Marko Ciciliani (audiovisual composition and head of project). It is funded by the Austrian Science Fund¹ as part of a program for artistic research (PEEK) with a runtime of three years starting in 2016.

The project's research objective is the investigation of the aesthetic and performative effects of elements from computer games in the context of audiovisual composition. We are following a triangular research design by investigating the phenomena from three angles: 1) the perspective of the composer/artist; 2) the perspective of the performer(s); and 3) the perspective of the audience.

The main research question is subdivided in a non-finite list of sub-questions that relate to the three research perspectives (gappp.net/english/researchquestions.html). New pieces are commissioned by audiovisual artists that address specific research-related questions. Up to three times per year, we come together in intensive working periods of up to five days during which two or three newly created works are rehearsed, investigated, discussed and eventually performed in so-called lab-concerts in front of an invited audience. The audience is asked to fill in questionnaires relating to the works they saw being performed. Some of them are also interviewed in focus groups. This provides rich material that gives insight in how the audience experienced the works. The performers are also interviewed about their experience with the works performed, as are the composers and visual artists. In the person of Marko Ciciliani and Barbara Lüneburg, research is also done from an explicit inside perspective. As researchers they are at the same time actively involved in the actual art making. This manner of investigation is typical for the methodology of artistic research.

Working periods conclude with an open discussion amongst the performers, composers/visual artists and researchers, who reflect on the entire working period and the research as a whole. So far the following composers/artists have developed new works: Kosmas Giannoutakis (2016/17), Simon Katan (2016/17), Christof Ressi (2017), Stefano D'Alessio (2017/18), Martina Menegon (2017/18) and Marko Ciciliani (2016-2019). By October 2017, nine new works had been created.

2. Games & Play

Games usually consist of the formulation of rules and goals that together form a system that invites players to act according to its order and structure. This rather generic description might already reveals the inherent musical potential of games. Music has always been controlled by an implicit agreement on a set of rules: with every score that is realized in a performance, the player accepts the encoded directions that it contains; furthermore, styles belonging

¹ Project number AR364-G24

to particular genre or historic period constitute a set of implicit rules, that extend the instructions of the score by manifold details that cannot be encoded in symbols. Despite this seemingly rigid system, musicians have always found ample space for variability, interpretation and self-expression. It seems, as if no score is so confining that it would not leave plenty of space for musical interpretation.

Rules are also instructions that tell the player of a game – although we can also apply this to the musician – what to do in a particular situation. Just as a score is a description of the realization of a piece, so are the rules of a game the descriptions of its realization. Both depend on somebody playing them. Game-rules usually allow more freedom than musical scores but they still describe unequivocally what has to be done, sometimes also when it has to be done. Rules thus prescribe a direction towards which a behavior should be directed, and set boundaries that must not be crossed.

It has to be acknowledged that playing a piece of music is a different activity than playing a game. However, the project GAPPP set out to explore exactly the overlap between these two diverse areas.

2.1 Composing game-based works, top-down and bottom-up

Rules are an abstraction. If the choice and description of rules are successful, they offer spaces of possibilities to the players that keep them engaged for extended periods of time. Rules are thereby structuring behaviors, usually without prescribing the individual actions. This is why the design of rules takes place on a level which is detached from its actual completion. Designing rules is therefore a top-down approach. From a musical perspective this can be problematic, because if only rules can be described, a thorough arrangement of musical details is out of reach. The micro-structure of the piece is the result of how the rules literally 'play out.'

In game-design, well designed rules usually show emergent properties. These are behaviors that are by way of comparison complex, when compared to the rules that generated them. Furthermore, the resulting behaviors are not an attribute of any single one of the rules that generated them, they are typically the result of the combination of the involved rules. A common example from the field of games would be chess. Six different elements are used and the rules of chess fit on half a page. Still, the amount of possible combinations has entertained many people for their entire lifetime. Emergence can also result from the interplay of rules in a musical system. In contrast to rules alone, emergence is a typical bottom-up phenomenon. Musically speaking, it can create richness and complexity on the level of details. Accordingly, when composing music based on rules, a rather fundamental challenge is to design rules in such a way that they generate a level of detail which is musically interesting and meaningful. If this fails, a musical situation might result that sounds schematic, arbitrary and unimaginative.

3. Perception of Play through the Audience

When consulting books on game theory it soon becomes obvious that different scholars offer varying definitions of games. The only point where almost all theorists agree on is that games contain rules. A second aspect on which most theorists come to an understanding – although not as widely as in the case for rules – is that games are goal-oriented.

3.1 Perception of Play according to Evaluated Questionnaires

During the first year of the research, we were strongly interested in the question if game elements that were integrated in the newly created compositions were perceivable for the audience. Since rules and goals seemed to be the most defining elements of games, we expected that the rule-driven and goal oriented behavior would be the most recognizable elements.

Surprisingly, this was not the case. After evaluating the questionnaires of three working periods with a total of approximately 100 participants, it became clear that rules and goals played a minor role in the detection of game elements. When asked what aspects of the performance reminded audience members of games, a majority referred to the ways how the performers interacted with the environment. Aspects like action-reaction, the player's involvement or their handling of an interface were most frequently mentioned (see Fig.1). This was one of the reasons why we decided to focus on the role of the performer during the following phase of the research, which is still ongoing.



Fig.1: The schematic shows the coding of the answers that refer to the open question in the audience questionnaires, as to which performance elements reminded of games. Contrary to our expectation that elements referring to mechanics would dominate, aspects relating to the performer's interactions were mentioned much more frequently

Player interactions constitute the essence of 'play' (bottom-up), while rules and goals characterize the mechanics of the game, its top-down architecture. Often both manifest on different timescales. Play and interaction are happening in an immediate level, while rules and goals are more often global phenomena and concern the enfolding of the work in time. It therefore requires a certain degree of abstraction in order to perceive the latter.

One might speculate whether the perception of these global features is a question of training, and in consequence, whether an expert audience of game-based compositions would find the perceptibility of rules and goals more relevant to their overall experience in the piece.

3.2 Relevance of Local and Global Timescales

Taking into account afore mentioned results of the questionnaire, we also consider the possibility that the time scale is the decisive element which determines which aspects of games are perceived as more prevalent than others, rather than the specific quality of player interactions. As a follow up we are interested if the relevance of goals and rules increases in audience perception, if they can be reached on a local rather than global time scale.

To give you an example: On October 17, 2017 at the Shanghai Conservatory as part of the ICMC 2017 (International Computer Music Conference) a multimedia work by Japanese composer Haruka Hirayama was performed. It was a theatrical piece which also included a small game element. The game element consisted of a performer who had to toss a ball and catch it with a small cup. Rules and goal were immediately evident – toss the ball and catch it – and the goal could theoretically be reached within a very short time frame. In this particular performance, the performer had to make many attempts before he finally succeeded, upon which a large number of audience members sighted loudly in relief and spontaneously burst in applause. This was a situation where rule and goal were immediate and inseparably connected to the performer's interaction. The goal was no more abstract than the interaction and hence, once the goal was reached it therefore also triggered the spontaneous emotional reaction.

Within GAPPP we haven't yet investigated situations where rule and goal manifested on such a short time scale. It is something which we might look into in future works.

4. The Role of Tacit Knowledge

In both our observation of audiences and performers we realized that tacit knowledge of performance situations, instrumental features or the use of specific interfaces is an important aspect regarding the perception and understanding of the gamified audiovisual works presented. Sociologist Stephen Turner describes the effect of 'tacit knowledge' as follows

Some activity, inference, or communicative act depends on both the user and the recipient possessing some inferential element or mechanism which allows them to understand, anticipate, co-operate, or co-ordinate with another. The typical sign of an element of tacit knowledge is that some people can perform the activity, including the activity of inferential reasoning, and others cannot. (Turner 2014, 155)

4.1 Tacit Knowledge and the Audience's Perception

Audience members reacted to different GAPPP-works according to their personal background and prior knowledge of performance situations, instrumental playing or interfaces used. The individual personal background of each audience

member makes hereby for different sets of 'tacit knowledge' and in consequence for a different interpretation of their sensory experience. The presence of a type of 'tacit knowledge' that stands in relation to the performance activity possibly facilitates the understanding of the piece whereas the absence of it might impede access to it. Following we give a few examples, how tacit knowledge influenced the concert experience of audience members:

Kosmas Giannoutakis' compositional and performance setting of *Attractive Correlations* (2016) used the entire performance space and invited the audience to freely move around, while four musicians were performing in between them. In one audience member, this setting evoked memories of a theatrical situation in which she herself had once performed. While others audience members had been left puzzled about the meaning and contextual structure of the situation, her prior experience rendered an interpretation of the piece that made sense to her personally. She thought to recognize a performative virtuosity in this particular set-up that she knew and understood from her own experience.

The interface 'Monome' used in Ciciliani's *Atomic Etudes* (2016) consists of a square shaped wooden panel with 16 rows of 16 buttons that can be backlit by LEDs in varying intensities. Usually it is placed flat on a table and used as a controller. When used in this way it does not have an instrumental character but this changes in how Ciciliani uses it in *Atomic Etudes*, where he holds the Monome vertically towards the audience. In this posture the board is held on its edges and pressing the buttons with many audience members evoked the association of playing an accordion. At the same time the 16x16 buttons serve as a crude graphic display which reminds of early computer games.

In the concert a violinist sat in the audience watching two performers play this same piece and was drawn to the performer with the more extrovert movements. With her instrumental background and her experience with gestural performance, this audience member reported that she could anticipate movements of this particular player, almost co-play them, and that she found herself completely involved in the playing.

In *Tiles* by Christof Ressi (2017) a clarinet player interacts with a 2D world in which he can move around freely and where he has to interact with different objects that are producing sounds. In a focus group interview following the performance, the question came up whether the audience member felt in any way immersed by this work. Three of the interviewees clearly felt rather detached from it, except for the only instrumentalist among them who was a violinist (a different person than in the aforementioned example). This person expressed that by watching how the clarinet player interacted with the environment, he could sense what it feels like to freely move in the 2D environment of the composition and to interact with it. Apparently, the shared knowledge of playing an instrument enabled him to become a backseat-player of the clarinetist, which made for an intense (co-)experience of the performance situation. An experience which was not accessible to the non-instrumentalists among our interviewees.

4.2 Providing Knowledge as Part of a Composition

As a result of these insights, in his piece *Tympanic Touch* (2017) Marko Ciciliani has designed a strategy how to provide a particular knowledge to the audience during the performance, in order to bring them 'on the same page' with the performers. *Tympanic Touch* focuses on haptic experience and how it can be translated to sound and visuals. The two performers are using nine different materials with distinct surface characteristics, like felt, paper, or sand-paper.

In order to not only aurally and visually offer the experience of touch to the audience, but also through concrete haptic experience, each audience member was given an envelope that contained a single sample of the materials the musicians used, and a tooth-pick. The audience was invited to play with this material and also to create sounds with it by scratching it with the tooth-pick. The commonly shared tacit knowledge of touch, that was supposed to be evoked by the sounds, was therefore also directly provided to the audience and shared with them.

Generally speaking, through the phenomenon of tacit knowledge performer and audience can share cognitive, sensomotoric and emotional experiences. Tacit knowledge has the potential to turn audience members from passive observers to emotionally, cognitively and actively involved participants. However, since every individual carries entirely different experiences and knowledges within themselves, it is not possible to assume any fields of knowledge that are equally shared by all.

5. Meaningfulness

5.1 in Games

In their book *Rules of Play* game theorists Salen and Zimmerman repeatedly refer to "meaningful play" as an essential

feature of successful games. According to them “[m]eaningful play occurs when the relationships between actions and outcomes in a game are both discernable and integrated into the larger context of the game.” Furthermore “[d]iscernable means that the result of the game action is communicated to the player in a perceivable way.” and “[i]f you do not receive feedback that indicates you are on the right track, the action you took will have very little meaning.” (2004:35). As far as integration is concern, they argue that “[e]very action a player takes is woven into the larger fabric of the overall game experience: this is how the play of a game becomes truly meaningful.” (2004:34f)

5.2 in Art

Within a game it can usually quite clearly be detected whether or not a particular action supports the progress towards a goal. As mentioned above, Salen and Zimmerman's definition of meaningful play implies that a successful game should be designed in such a way that every action is directly or indirectly relevant for achieving this goal.

If we try to translate this to the art context, it could be stated that every artistic action should be aesthetically relevant to support the manifestation of a particular artistic idea. At first sight, the application of above statement to art may seem less satisfactory than the same applied to a game context, since in a game a goal is usually clearly defined whereas in an artwork the artistic idea is often more concealed and less openly declared. Nevertheless, it seems plausible that a particular artistic focus is maintained while accumulating actions within a performance. The act of interpretation, when performing a musical work can for instance be described as the search for the reason why a particular sound has been put in a specific place. Just as an action within a game is given legitimacy by putting it in a relationship to a goal, an artistic action is given legitimacy by putting it in a relationship to the articulation of an artistic idea.

While according to Salen and Zimmerman a game-player relies on feedback from the game in form of points or reaching new levels to get confirmation of the meaningfulness of their actions, a performer of an artistic work cannot depend on such external assurances alone. A performer of a work that integrates game elements has to fulfill two tasks at once: following and exploring the game's rules and at the same time finding a satisfactory musical and performative interpretation of the actions. This opens up new questions that will be tackled in the next chapter.

6. Performance Aspects

‘Ordinary’ pieces with live-electronics differ clearly from the gamified audio-visual works of GAPPP in the notion of what the electronic interface and interactive computer system respectively is used for. In many solo pieces for instrument and live-electronics, the software system expands the instrument and processes the instrumental input. However, in GAPPP-compositions the software interface usually functions amongst other as a means to reach certain goals, but it also operates as a kind of partner or opponent that is not entirely controllable but adds some contingency to the performance. The system has an existence that is to a certain amount independent of the performer, and it is the overall system with which the performer interacts and that actively responds to or counteracts the player’s efforts.

Similar to what Di Scipio’s describes for interactive music systems “Here, ‘interaction’ means that the computer’s internal state depends on the performer’s action, and that the latter may itself be influenced by the computer output” (Di Scipio 2003, 270), the game aspect in GAPPP-works suggests (in various degrees of intensity) a game environment and a course of action that the performer wants and needs to follow and interact with. At the same time the performer has the responsibility for a significant part of the overall concert situation – and linked to that – the perception and total experience of the audience. This double role: the artistic responsibility and the engagement with the game system, clearly distinguishes the performer's task when performing works with game elements from more traditional pieces, where the main responsibility lies in the musical interpretation.

6.1. Future Research into Agency

Regarding the performance perspective, in our future research we therefore look for different aspects of meaningfulness in gamified art works and discuss it with the composers who create new pieces for the project. On a first level we are interested in agencies offered by the composer that allow us to strategically shape the pieces, design personalized musical interpretations and apply our performance skills in a way that it is satisfactory on a musical and technical as well as personal involvement level. Hereby, we ask amongst others the following questions:

Do the game strategies offered by the composer enable the performer to shape the piece strategically in form and content? Do the performer's decisions have a clear impact not only on the course of the game but also on the musical experience of it? Does the work offer the player opportunities to gain skills with regard to the game environment and does this enhance a performer's sense of agency? In how far do these aspects of the performance influence the musical or sensory experience for performer and audience alike?

6.2. Future Research into the Relationship Performer – Audience

On a further level we are interested in aspects of the actual concert situation. Here the interaction with the audience is one of the focal points of our research. A question we originally asked, namely 'Are the game strategies, rules and goals offered by the composer recognizable and does this heighten the involvement of the audience?' turned out to be of less importance for the audience than we had expected (described in detail in 3.1). However, it can add meaningfulness for the performer's work. Not only do clear rules and game strategies add to the feeling of confidence and agency when performing, it is also easier for the performer to project and share a cognitive and communicative situation with the audience, which adds to the feeling of joint social and emotional experience.

6.3. Overlap between Game-Related and Music-Related Tasks

While analyzing the different works that have so far been written for GAPPP, it became evident that in some works the game-related, and the musically or artistically-related tasks were practically inseparable, while in others they formed clearly distinct task areas. We would like to point out that a strong coherence between the tasks that are related to the game and those that follow a musical goal is by no means a quality trait in itself. The piece *Tiles* by Christof Ressi for example required a fair amount of strategic planning in order to adequately explore the potential of the game elements. However, although this strategic planning happens in the first instance in response to the game design, it needs to be applied for the formal construction of the music as well and entails detailed musical consequences. As a musical composition this particular piece works only with an experienced improviser who conceptualizes a compositional design based on the musical material, offered through the game, densities of (audio and visual) actions, dynamic, harmony etc, while improvising on and concurrently playing with the game system. Although in *Tiles* game and music related tasks could be almost understood as two separate entities, together they end up offering a rich space of possibilities for the performer.

7 . Conclusion

This paper offers a summary of the most important questions and insights that have accumulated over the first 1.5 years of the artistic research project GAPPP. Apart from the fact that games per se are an immensely rich and varied field that offer many different applications in artistic contexts, our application of game features in audiovisual performance-based compositions revealed an unexpected complexity. This complexity primarily arises from the interaction of a performer with an ergodic system, and from the way how such audiovisual works affect an audience. Furthermore, the interplay of game related and artistically related objectives proved to offer additional areas for exploration. From all three perspectives that we observed from – composition, performance, and audience – unexpected questions and findings came up.

While the first phase of the project was dedicated to various explorations of game-elements in audiovisual compositions and their perception by the audience, for the second phase we shifted the focus to the impact that a game system has on the performers and how their experience translates to an audience.

Works Cited

- Di Scipio, Agostino. 2003. "Sound is the interface': from interactive to ecosystemic signal processing." Organised Sound 8 (3): 269-277.
- Salen, Katie and Eric Zimmerman. 2004. *Rules of Play*. Cambridge: MIT Press
- Turner, Stephen P. 2014. *Understanding the Tacit*. New York: Routledge.