

Investigating the Artist's Role in Social Group Games

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Abstract

Social interactions are a key objective in cultural experience design and museum games are often aimed to foster conversations between visitors. However, the participation of cultural creators is hardly explored. In this paper we examine how the artists may participate in storytelling games played over their artworks. We present a field study at a museum exhibition, where the artist joined a group of visitors crafting and sharing stories over his paintings. We investigate how the artist's participation affected the group experience, considering the visitors' perspective along with the artist's. Both sides reported positive outcomes, indicating an engaging social cultural experience. Furthermore, we discuss the effects of bystanders in traditional as opposed to game-event settings. Building upon the later, we pinpoint limitations and challenges over the artist's participation, and explore varying levels of engagement, sketching good practices and new directions.

Keywords: Cultural group visits, Art exhibitions, Storytelling games, Social interactions, Artist participation, Game Events' Design, User Studies

Received on 24 September 2019, accepted on 13 October 2019, published on 28 October 2019

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doi: 10.4108/eai.4-2-2020.163157

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1. Introduction

The value of social interactions during cultural visits is advocated in several museum studies [1]. Aiming to foster verbal communication between a pair or group of visitors, research and commercial works have exploited a variety of techniques, ranging from synchronized audio listening [2, 3], to creating shared projection spaces [4, 6], or/and offering content variations on the mobile phones of the group members [5, 6] to promote information exchange between the participants. Several group games have also been proposed to that end, ranging from short quizzes, puzzles and shared "enigmas" [13, 16], to scavenger hunt and role-playing approaches [14, 15, 18] or collaborative story crafting [17].

Moving in that direction, in our previous work we proposed a storytelling game for groups of visitors, asking the group members to make and share stories about the

artworks of a cultural collection [7]. The game is inspired by the popular board game Dixit and it is titled "Find the Artwork behind the Story!". It defines a group experience that takes place and evolves in the environment of fine art exhibitions, combining moments of personal reflection to social encounters through the game phases (described in Table 1). We first conducted a series of playtesting sessions with physical materials in different environments and exhibitions, exploring the game's affordances and requirements [7, 8]. We then produced to a mobile-based design to support the proposed game, leveraging the visitors' personal handheld devices as game controls [9]. Moving one step further, we currently investigate how the artists of cultural collections may be involved in the described game experience.

In this work we propose that the artists participate in the group game, listening to the stories and explanations that visitors make about their artworks, and sharing their own stories and reflections during the game. To the best

of our knowledge this is a rather novel approach, since joint artist-to-visitor participation in gallery games is hardly explored.

Table 1. Game phases per Storyteller turn & corresponding actions under each player role

Game Phases	Storyteller	Voters
	#1	#N-1
<i>Story Making</i>	Secretly chooses one artwork and conceives a story about it	Wait for the Storyteller to complete story crafting
<i>Storytelling</i>	Narrates and more or less enacts the story in front of the whole group	Listen and watch the Storyteller's performance
<i>Voting</i>	<i>Waits until voting is completed</i>	<i>Move around the gallery, now examining the artworks with respect to the Storyteller's performance</i>
<i>Explanations (main social phase of the game)</i>	<i>Reveals last the artwork behind the story, to increase surprise and suspense during the phase</i>	<i>One by one, Voters reveal chosen artworks and describe their rational for selecting them</i>
<i>Scoring</i>	Scores points for successful votes. If ALL or NO Voters find it scores 0	Score points if voted successfully, or the Storyteller scored 0

To that end, we performed a user study inviting an artist to participate in a group playtesting session at his personal art exhibition, and thus enabling the participants to have a personal, hands-on experience with the proposed gameful scenario. The primary objective of the study was to examine how the artist's involvement in the game shapes and affects the group experience, investigating its affordances to foster communication and interactions between art gallery visitors and creators. We report a series of results that demonstrate the benefits of the suggested approach, combining participants' qualitative feedback to behavioural observations. The secondary objective of the study was to evaluate two new components that were recently introduced in the mobile-based game design [9], namely the Speeding and the Guessing bonus, guiding following game iterations.

Then we reflect on "compatibility issues" between the described game experiences and traditional visits in the exhibition's environment, summarizing observations from the current study along with previous ones. We showcase the solutions offered by the "game-event" use case scenario that was proposed by the artist, and then highlight important challenges along with scaling

limitations over the artist's participation. In that direction we discuss varying levels of game engagement for the artist, reporting related user study findings, formulating good design practices and identifying new technical requirements. Finally, we suggest a flexible "guest" based solution that defines free-form interactions between artists and visitor groups, providing a promising workaround that enables "one artist-to-many groups" participation schemes.

2. User Study Description

Leveraging the 3-dimensional framework proposed by Christian Roher to classify user experience research methods [11], the described user study constitutes a qualitative field study, generating data about participants' behaviors or attitudes based on observing them directly. We combine attitudinal to behavioral observations, examining what the participants "said", along with what and they "did". During our analysis we extrapolate results from on-site behavioral observation and video-recoding analysis, to participants' feedback through open questions and questionnaire items, which were used in a combined way to guide one-to-one interviews in the following. Aiming to examine issues that are broader than application usage and usability, we did not leverage the mobile game prototype (whose alpha version had just been released by the time of the study). Physical materials were employed instead, in line with our previous work.

2.1. Participants

An open invitation was announced at a research laboratory of the University of Athens, asking to participate in a user study that would include a game, taking place at the on-going (at that time) exhibition of Stefanos Rokos, at the Benaki Museum. The invitation prompted the interested candidates to invite also the persons from their personal social networks who would most likely accompany them in a typical cultural visit or social event.

The selection criteria leading to the final group formation were that i) the participants are adults, and ii) they had all met each other at least once in the past (to ensure a minimum level of familiarity between the group members). A social group of three university colleagues with their partners was formed, containing 3 women and 2 men, all in the age range from 30 to 45. Two of the participants reported that they were familiar with the artist and had already visited the exhibition before, but they felt they did not have the opportunity to reflect on the artworks due to highly crowding conditions, expressing their desire to visit it again.

The participants were informed about the meeting time and were given the option to make a free-visit in the gallery before playing the game (up to an hour ahead). One day before the visit, the participants filled in a pre-

play questionnaire (online, using Google Forms), entering demographic data and indicating their prior experience with art exhibitions and storytelling games. It is worth noting that 4 participants had played the board game Dixit in the past, so they were already familiar with the main game objective.

2.2. Exhibition Environment & Playtesting Conditions

The exhibition contained 14 paintings, inspired by the 12 songs of the album "No More Shall We Part" by Nick Cave & The Bad Seeds + two b-sides. The gallery layout was structured in three main areas, implying the feeling of a temple. The artworks were displayed on the walls, on the left and right areas (see Fig. 1).

The strong connection to the music album was reflected in the gallery's syntax in several ways. First, the songs' titles and lyrics were presented on large columns, facing directly the corresponding artworks, and thus indicating the dialogue between the two forms of art. Second, the album was continuously playing on the gallery's background, gradually going over all the album songs. In addition, the visitors could use their mobile phones to scan the QR codes (located at the side of each column) and listen the selected song through headphones. When located in the central area of the exhibition (Fig. 1), visitors had partial visual access to the surrounding artworks.



Figure 1. Exhibition environment.

About two weeks before the user study, we contacted the artist, Stefanos Rokos, first through email and then via phone. We informed him about the gameplay we are exploring, our previous playtesting sessions, and the objectives of this research. Then we asked him if he would be willing to participate in a playtesting session at the environment where his personal exhibition was currently hosted, having a "hands-on" game experience, with a group of invited participants, playing over his artworks. The artist expressed his interest in joining the session and suggested specific timeslots in order to avoid crowding conditions that would impede him from being committed to the gaming process. As a result, the user study took place during off-peak gallery hours (Thursday

morning, May 23rd, 2019). During playtesting the number of concurrent "external" visitors in the gallery remained lower than 10, at all times.

2.3. The Game Experience

For the user study purposes, the described group game is implemented with physical materials. All players are handed private pens and post-its packs, using color coding notation (i.e. a different color is assigned to each participant). In addition, the Storyteller is provided with a hand-crafted notebook. Each page of the notebook corresponds to a game episode, i.e. one Storyteller turn, and it is organized in three vertical parts, following the temporal succession of the game phases (see Fig. 2).

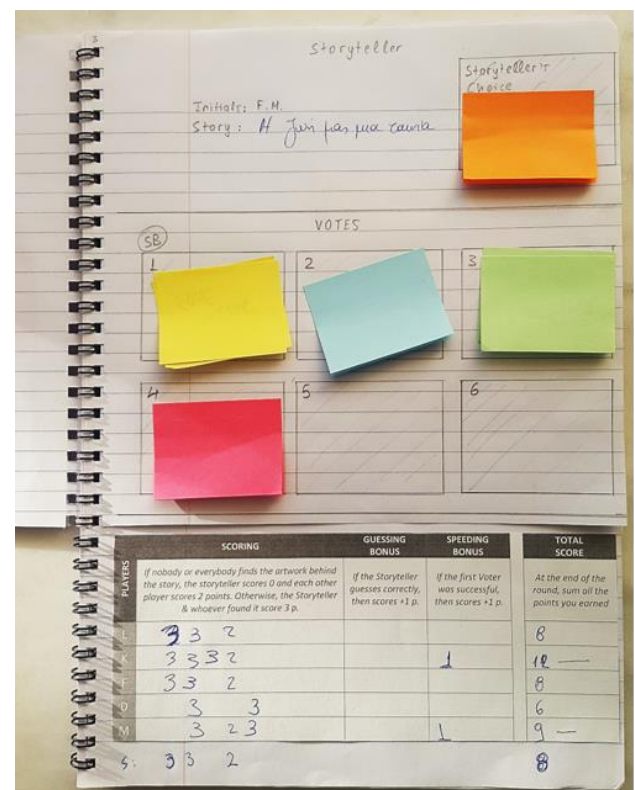


Figure 2. Crafted paper notebook layout.

On top, the Storyteller writes down his/her story, along with the title of the artwork behind it (which remains hidden by placing a post-it on it). The Storyteller narrates the story to the group, and then the voting phase begins. The middle part of the notebook is the area where all Voters' choices are placed on. The Voters use their post-its to privately note down their selections (i.e. the title of the artwork). To complete voting, they approach the Storyteller and stick their (hidden) votes on the appropriate placeholder frame (see Fig. 3, on the right).

When everybody completes voting, the group proceeds to votes revealing and Explanations phase. The Storyteller is expected to lead the discussion by gradually uncovering

the hidden votes and communicating the results to the whole party. Finally, the scoring table is maintained at the bottom part of the notebook, where all player’s scores are progressively added next to their name initials. When the episode is over, the Storyteller turns the page, reads the name of the next Storyteller and hands on the notebook (the bottom part of the paper pages has been cut off, supporting scores’ maintenance and update through the game episodes).

To support the introduction of the Speeding Bonus in the gameplay, we numbered the voting frames on the notebook, indicating the vote-completion ordering. The first player who approaches the Storyteller places his/her vote on the 1st frame, the second one uses the following frame and so on. The SB notation signifies that the particular player (i.e. the one with the yellow post-its pack in the episode depicted in Fig. 2) is candidate for receiving the Speeding Bonus. During the scoring phase, if the vote on the first frame matches the Storyteller’s selection, one extra point is given to the corresponding player (third column of the Scoring Table in Fig. 2).



Figure 3. Snapshots from playtesting, showcasing the use of the notebook.

To implement the Guessing Bonus, we printed small paper “guessing cards” that depicted the forenames of all the group members, along with playful, personalized avatars. When storytelling is over and voting starts, the facilitator hands a guessing card to the Storyteller, prompting to predict and circle the Voters who would find the artwork behind the story. As soon as the first Voter approaches the Storyteller and completes voting, the facilitator informs the Storyteller that that there are 10 seconds left to complete the guessing process, and then asks to deliver her the filled-in card. During scoring, in order to acquire the extra point of the Guessing Bonus an “exact match” was required, i.e. all the Voters that had been circled by the Storyteller needed to have voted

“correctly”, and only those (i.e. non-indicated players needed to have missed it).

2.4. User Study Procedure

On arrival, the participants were informed about the context of this research and filled out the consent forms, allowing for video-recoding. When the whole group was gathered, the facilitator explained the gameplay, handed on the post-its and pens to the participants and presented the crafted notebook, explaining its usage during the game. The Speeding and Guessing Bonuses were introduced, and then the playtesting session started.

A camera was set on a tripod at the end of the central area of the gallery, where the group gatherings were anticipated to be mainly taking place. In addition, a dedicated human recorder was following the Storyteller during the playtesting sessions, enabling to capture and analyze the majoring of group discussions. Finally, the game facilitator was present during playtesting, delivering the Guessing Bonus cards to the Storytellers.

A round of 5 game episodes was completed in about 1 hour and then the group moved to the museum’s coffee shop, where each participant filled in a short post-play questionnaire (~5 minutes), evaluating their game experience, indicating their willingness to participate in future games, and finally reporting the strong and weak points of the game (through open questions).

Table 2. Overview of user study phases

Study Phases	Characteristics		
	Duration	Location	# of Part/ants
<i>Free-Visit to Exhibition</i>	Up to 30 min.	Exhibition Hall	3
<i>Playtesting Session - Round 1</i> (5 visitors)	1 hour	Exhibition Hall	5
<i>Questionnaire</i> (Part 1)	5 min.	Museum’s Coffee Shop	5
<i>Coffee break & “repeated” game round with artist as Voter</i>	50 min.	Museum’s Coffee Shop	6
<i>Playtesting Session - Round 2</i> (4 visitors, artist & exhib/on designer)	50 min.	Exhibition Hall	6
<i>Questionnaire</i> (Part 2 for visitors, Part 1 for artist)	15 min.	Museum’s Coffee Shop	6
<i>Individual Interviews</i>	30 min. total	Museum’s Coffee Shop	5
<i>Artist Interview</i> (at a following day)	1 hour	Filion Cafe	1

In the following, the facilitator announced to the group that they were going to play one more round, but this time the artist, Stefanos Rokos, would join them, participating as player in the game. A few minutes later the artist arrived, and he was introduced to the group members who were not familiar with him. Not having played the game himself before, the artist asked the group members to describe him their experience, leading to a group discussion. At some point, one participant suggested to share the stories they had made with the artist, and see if he would be able to find the artwork behind them. The artist and the majority of the group members strongly welcomed the idea. So one by one, the participants announced their personal stories to the artist (reading them out loud from the game notebook were they had been written down) and the artist selected one of his artworks that seemed to match it. Then the corresponding participant revealed the identity of the selected artwork, explaining to the artist why he/she had selected it. Some of the votes were also discussed, sharing different perspectives with regard to the story and the artworks. In essence, the game round was “repeated” away from the exhibition’s environment, now having a new, “special” voter to be playing along.

When this process completed, the group moved altogether at the exhibition’s space. The artist took the initiative to invite the museum’s exhibition designer, Natalia Boura, to participate as well. Although not originally planned in the design of the user study, we welcomed the participation of an additional “special” player. In addition, one of the participants decided to refrain from the game due to health issues (pregnancy discomfort). The new, extended group of 6 players (4 visitors plus the artist and the exhibition designer) started a fresh playtesting round. The game was completed in about 50 minutes, and then the group moved again at the coffee shop. The participants filled in a second questionnaire and their responses were used as input, driving the discussion in a short, one-to-one interview section with the facilitator. The artist was asked to fill in the questionnaire as well, but a rather different interview technique was employed. The artist was interviewed several days after the playtesting session, enabling him to reflect on his experience, and then discuss it in detail, examining its affordances, requirements, and potential future directions. The interview was audio-record and we report several parts of the (translated) transcripts in the following.

3. User Study Findings & Discussion

In this section we report a series of findings, presenting them with respect to the two main objectives of the user study. First we examine key issues related the artist’s participation in the game experience, which is the primary objective of the study, discussing the visitors’ perspective first, and elaborating on the artist’s viewpoint in the following. Then we summarize results related to the

introduction of two new game components, reflecting on their strengths and weaknesses.

3.1. The Artist as a Player in the Group Game

The Visitors’ Perspective

Based on our playtesting sessions so far, the participants’ approaches to story making vary a lot. This result is also reflected in the current study (Table 3 depicts the stories that were created by the participants over the 2 game rounds). Some stories have structure (beginning, middle and closure), narrating personal feelings or fictional experiences. Several stories take the form of short titles or statements, which are either generic, humoristic, emotional, or referencing particular items in the paintings (or persons related to them, such as painters or musicians). So the main questions that we set with regard to the visitors’ perspective towards the artist’s participation are: Did the participants want to share the stories with the creator of the artworks? Did they experience discomfort or unease while doing so? And finally, did the participation of the artist add value to their experience and in what ways?

Table 3. Stories crafted during the game

Participants’ Stories	Place in game	
	Part/nt ID	Round
<i>The weather was nice and we were outside, or we were looking out-side, and maybe we were in a ship, going or returning. But you knew where you are, because the trip had a spirituality, and your heart opened.</i>	#1	1
<i>Easter of 2011 at Kefalonia (a Greek island). Just a few people at the epitaph in the village. The rain starts & we gather towards the church, where octopuses had been placed on grill.</i>	#2	1
<i>Our life, one movie</i>	#3	1
<i>Black Faceless River III</i>	#4	1
<i>Panousis and Van Gogh</i>	#5	1
<i>And when he returned, everything was exactly the way she left it, as a museum of colours. Grey of past decades and present time, but the pain was deeply rooted, taking a lot of space. He closed the door and left.</i>	#1	2
<i>Black’s shine beneath the colours</i>	#2	2
<i>She waits. She still waits. Frozen in time.</i>	Ex. Des/er	2
<i>Raised before Easter</i>	#4	2
<i>Kafkaesque metamorphosis at the mountain of the forest</i>	#5	2
<i>Twenty bitter juices</i>	Artist	2

When the facilitator announced that the artist would next join the group to play along, the group members seemed to be surprised, and Participant #4 commented aloud: *“Thank God he was not here before to listen to my story!”*. It was the only story in the first round that nobody found the artwork behind it, so the rest of the group members considered it as a humorous comment and laughed.

However, as described in the previous section, when the artist arrived at the coffee shop he initiated a group discussion about the participants’ prior game experience and, during the discussion, one participant proposed to share the stories with the artist and see if he would be able to find the artwork they were referring to. All participants enthusiastically welcomed the idea, except from Participant #4, who remained silent. However, he did not raise any objections and went along with it.

The rest of the group members started a discussion about whether a score should be computed for the artist as well, based on the rest of the answers (depicted on the notebook). One participant commented that it would be “unfair” for the artist, since he would not have the opportunity to get the Speeding Bonus, as they did. Despite that, the group finally decided to keep scoring, by adding the artist’s name initial at the bottom row of the scoring table (Fig. 2), and updating his score during the episodes.

We stress out that this process was not planned, or even anticipated, in the study design phase. Since it relates to one of the main research questions of the study, the facilitator did not intervene, and allowed the group to go-on with this, although significantly diverging from the original time plan. The group members’ initiative and eagerness to “repeat” the game with the artist offers valuable insights, demonstrating the participants’ strong willingness to share their stories and interact with the creator of the artworks. The group had been informed that a new round with the artist was planned to take place right away, yet that was not enough: they also wanted to share with him their past stories.

In the interview section, the participants were asked if they felt discomfort or unease while sharing their stories and reflections with the artist, and everybody replied negatively. Participant #4 reported that he was reluctant to do so at first, being afraid that his story would potentially upset or offend the artist’s work. However, since he was the 4th player to reveal his story, by the time his turn came he had observed that the artist was very friendly and had welcomed the stories and remarks made by the other participants, so his concerns had been reduced. The participant pointed out that he would probably have felt discomfort if he was the starting player (i.e. the first one sharing his story).

All the participants considered that the artist’s involvement significantly enriched their gameful visit. *“Amazing experience having the artist and the curator as part of the team. Loved the fact that I was a member of a relatively small group that enjoyed talking and listening as well.”* noted Participant #3 in the open comments

section of the questionnaire. Discussing with the participants why they valued the artist’s participation (in the interview section), we observe that two main reasons were repeatedly brought up. First, some participants valued a lot the “authority” that the artist, as well as the exhibition designer, bring into the gameful visiting experience, reporting a general strong interest into the experts’ insights and interpretations. Second, the discussions that took place during the game were inspired by the artist’s work, but covered a wide variety of aspects, ranging from historical facts to music preferences or personal experiences and beliefs. This aspect was particularly appreciated by some participants. *“I feel I met the person, not only the artist”*, said one participant, emphasizing the social dimension of the experience.

The Artist’s Perspective

Similarly to the visitors’ side, the main questions that we set with regard to the artist’s viewpoint are: Did the artist enjoy listening to the stories and explanations made by the participants and why? Did he experience discomfort or unease at any point? And, focusing on his special role in the process, did his participation in the game foster his interaction with the participants, and in what ways?

With regard to the last question, we expected that, although the artist did not have a special role in the game-play, he would behave differently than the rest of the participants. Our hypothesis was that the artist would often take the initiative to lead the discussions, revealing his personal thoughts, intentions, or knowledge with regard to the referenced artworks. However our hypothesis was rejected. The artist overall behaved similarly to the other players; he provided explanations only in a few occasions, under the explicit request of the group members. In light of this observation, this issue was brought up during the interview section, discussing the artist’s reflections over his role in the game process.

At the beginning of the interview, the artist was asked to make an overall assessment of his game experience through two rather general questions (*“What do you think about it? Did you like the game?”*). The artist replied very positively, characterizing the game as very nice, clever and entertaining. He commented that he has talked to a lot of people about it, as something that he really enjoyed to be part of. Moving on, his first remark was: *“I discovered a lot of things in my artworks that I had them for granted but I discovered them on a second level, on a second basis, and I better understood how others may see and perceive them, which I really enjoyed, as a process.”* This comment relates to our first, as well as to the third research questions, and the artist was asked to give a related example from the playtesting session.

The artist commented that this happened in several occasions, but the most prominent example is the episode where he was the Storyteller. His story was *“20 bitter juices”* (see all player stories in Table 3) and the artist explained: *“To me, it was extremely evident that there were 20 buckets in one artwork, which were full of tears, as described at the lyrics of the song. But people do not*

pay attention to every detail of my artworks, nor do they read the lyrics of all the songs. So what I considered to be obvious made the participants look closer to the artworks, searching for particular things. This is a clever process and I was really happy to see that they all engaged in it. Also, I was glad to find out that the story was not as evident as I thought, since not everybody found the artwork, which shows that everything is relative, and what I have in my mind as an artist, or viewer, may be perceived and discovered in rather different and personal ways.” Then the artist was asked if he felt the need to intervene while listening to the group’s reflections and reasoning over his artworks, in order to share his personal thoughts about them. The artist replied negatively, explaining that he preferred not to take the lead at all. “I really enjoyed that they were all saying stories and comments about my artworks, that they found several elements and details in them. Even if some were wrong, I did not want to correct anyone or say something more about it.” The artist referenced a concrete example where one of the participants mentioned an octopus in his story, later explaining that he saw the tentacles’ of an octopus in the painting: “I loved that! I did not want to say -no, that’s not tentacles. I did so only because someone asked me”.



Figure 4. Snapshot from playtesting with the artist: one participant reveals his personal thoughts, pointing to particular elements of the artwork.

When questioned if his participation in the game fostered his interaction with the participants, the artist replied very positively and explained: “Through the game I met some people that I did not know at all, and we immediately found common references, reasons and topics to discuss, which would probably not happen without the game context. It brings you closer to the others, and I think that I am not saying this only because I was the artist. If someone else was the artist, I think I’d play the same game and get to meet the group with the same enthusiasm, talking about his/her artworks.”. So we

conclude that the artist clearly preferred to take on a traditional player role in the game, paying high attention to the participants’ discussions and remarks, and appreciating the social dimension of the game experience.

With regard to our second research question, the artist reported that he did not feel uncomfortable within the group discussions. He was asked if he is concerned that his work may be undermined by the stories that may be potentially crafted, since there is no control or limitation to what the players may actually say. The artist replied negatively: “I think that my artworks are an entity of their own, they will not be affected or altered by a different explanation”.

However, a different type of concern was revealed during the discussion, related to the context of the game experience and, in particular, to the co-presence of visitors who do not participate in the game. “At some point, there were 2 visitors in the gallery, who were not in the mood of what we were doing. We were running around, laughing, talking aloud, making nice comments, making the space our own. But them, they wanted to make their own tour, under different circumstances, to listen the music and see my artworks in a different way and pace.”.



Figure 5. Snapshot from playtesting with the artist: group discussion at the centre of the hall.

This concern is also reflected in the artist’s behavior during the playtesting session (captured in the video recordings). We observed that in a few occasions the artist guided the group to move towards the centre of the gallery for continuing their discussion or game actions, avoiding prolonged stays in front of each artwork. For instance, after the participant in Fig. 4 explained his reasoning for voting the particular painting, the artist prompted the group to move towards the central part of the exhibition’s space (see Fig. 5), and the following discussion took place there (instead of right in front of the related artwork).

When asked about his motivation to do so, the artist explained that his objective was to leave the space open close to the artworks, so that that external gallery visitors could effectively access them following the visit path implied by the gallery’s space syntax. Elaborating on this concern the artist raised a compatibility issue between the described game-based experiences and traditional gallery

visits, and proposed to conduct the social group games in context of “game events”. He suggested to book the exhibition environment for particular timeslots, so that all visitors are informed and thus, fully aware of the gameful activities that will be taking place at that time.

3.2. Speeding & Guessing Bonus

The Speeding Bonus was received in different ways by the participants. Participant #2 reported it as one of the strong points of the game (in the related open question), noting that “*It puts you in a state of quick processing of the artworks*”. In the interview section, the participant expressed his appreciation for quick pacing and competition, explaining that the Speeding Bonus strengthened these aspects in the overall game experience. On the contrary, Participant #4 mentioned it as a negative point, favoring the creative and intellectual challenges posed by the game over quick pacing: “*It does not give the opportunity for in-depth analysis*”, he noted. Conflicting visitor attitudes towards competition and pacing were also identified in our previous playtesting sessions [7], highlighting the challenge to balance between different personal preferences of the group members [10].

In addition, several comments and group discussions during the 1st playtesting session were related to the Speeding Bonus. The “quickest” voter often announced aloud “*I am going for the Speeding Bonus*”, leading to teases and jokes from the other participants. In one occasion, after the votes were revealed, one participant said “*You aimed for the small prize and you lost the big one*”, a tease that drove the group members into discussing whether targeting for the Speeding Bonus is a good game strategy or not.

Assessing its difficulty, the Speeding Bonus was effectively acquired twice in the first round (by different participants), which is a rather reasonable number for a group of 5, and four times in the second round. However, during the second round it quickly became evident that the artist had a way quicker voting pace than the rest of the group members. In two cases he voted instantly (i.e. in less than 5 seconds), and he was the first one to vote most of the times (3 out of 5), acquiring the Speeding Bonus twice. The group members complained that it was unfair to compete against the artist in speeding terms, realizing his strong advantage in recalling and examining the artworks.

Moving on to the Guessing Bonus, we observed that it was never acquired over the two rounds, so we conclude that the task set was too difficult. Following an iterative design approach, we plan to ease and also speed up the guessing task, by asking the Storyteller to “bet” on (only) one of the participants, instead of requiring to find them all. Based on the game transcripts, we expect that the proposed adaptation will be neither too easy to accomplish, nor too difficult.

4. Game Events: Offered Solutions, Limitations & Challenges

The game-event scenario that was suggested by the artist seems to be particularly suitable for the proposed cultural group game experience. The role of bystanders as unwitting observers is often examined in related literature [12] and our observations from previous studies confirm that the co-existence of non-game participants in the exhibition’s environment may affect the players’ behavior and overall experience in several ways.

In the current study the game participants made no explicit reference to the co-existing visitors, who as described earlier, were rather limited during both playtesting sessions. This is also reflected in their questionnaire responses; in the related item (“Did it feel awkward to be moving & doing something different than the rest of the visitors?”) 4 participants replied negatively and one was neutral. However, the effects of co-existing, ordinary visitors get more evident as the crowding conditions increase.



Figure 6. Playtesting conditions at the 1st stage of the exhibition “Van Gogh Alive – The Experience” (March 2018).

For example, in a prior study we examined 2 groups of 6 participants each, playing the game at the first stage of the exhibition “Van Gogh Alive – The experience” (Fig. 6), hosted at the Athens Concert Hall - Megaron, in Athens, Greece, from November 2017 to March 2018). Playtesting took place on a Friday evening, two days before the closing date, which turned out to be a fully-booked time slot. In this study, the co-presence of external (to the game) visitors was also reflected in the visitor’s perspective, highlighting particular situations where their in-game behavior diverged from the dominant gallery visiting behavior.

Looking closely at Fig. 6, one observes that all artwork representations were placed on walls, and traditional visitors mostly followed a specific “line path” while crossing the exhibition’s stage, according to the gallery’s space syntax. In this way, the wide, central hall area was left unoccupied, enabling game participants to perform

group gatherings and social interactions during playtesting. However, the participants' "unstructured" back-and-forth physical movement towards the artwork representations (throughout the game phases) diverged significantly from the "linear movement" of the gallery's non-game visitors. Several game participants reported that the different flow and modality of their visit resulted in experiencing moments of unease: in the interview section one participant insightfully elaborated "*I felt like I was cutting in line, taking the place of others*". Another participant commented: "*It was awkward that we were laughing and talking out loud. Nobody else did that*". Relating to the current study, these comments match perfectly the artist's input in the interview section. Being more sensitized and concerned about how other visitors perceive the game experience, the artist identified similar staging and modality issues even in a setting without crowding, i.e. where the effects of co-present visitors are not stressed out in the game participants' perspective.

Based on the overall feedback acquired so far, we expect that the organization of dedicated game events where multiple visitor groups are invited to play the game at the same time in the exhibition's space will remedy the described situation, ensuring that co-present visitors set visit objectives along the same lines, move in similar ways and share close experience states. However, the artists' efficient involvement in this use-case scenario seems to be less clear.

Assuming that there is one artist and several visitor groups who play the game simultaneously during the game event, a practical challenge is raised: how can the artist efficiently participate in multiple game sessions? Examining the whole playtesting data we have gathered until now, we observe that each game round may last from about half to two hours, depending on the number of players (see [7] for a more detailed description). So if the artist is required to be fully committed to the entire game, from its beginning to end, that would significantly constrain the amount of groups that the artist would be practically able to join during a game event. How can we increase the number of visitors that the artist is interacting with during each game event?

To address this challenge we examine different levels of in-game commitment for the artist, de-composing the overall game experience into decreasing building blocks. In the following section we present alternative approaches to that end, while at the same time reporting related results from the current study and discussing their implications in future mobile game designs.

4.1. The Artist as Player: Levels of Game Commitment

Each game group session includes one or more "game rounds", and each round includes X number of "turns", where X equals to the number of players. So instead of assuming that the artist will be playing with the same group an entire game session, we consider the following

two main options of partial participation: i) the artist participates in exactly one round of the game session (as was actually the case in the reported user study), or alternatively ii) the artist participates in a number of Y turns within a round, where $Y < X$.

Regarding the former option, our approach in the described study was to include two game rounds in the session, having the artist to join-in the second one rather than right away. The benefits of this choice are two-fold: first, the participating players have the opportunity to get more familiar with the game process as well as with the cultural collection, having collectively discussed and reflected over the paintings before the artist enters the game. In this way, they are enabled to raise questions (that may be asked when they meet the artist) and, most notably, to compare and reflect on the paintings deeper and quicker than they were at the beginning of the game.

Considering the game experience as a gradually unfolding journey [12], proper pacing is a key aspect in the experience design. A temporal analysis over the collected playtesting data shows that the duration of each turn tends to decrease as the experience progresses and participants take less time to complete game actions (such as story crafting and voting), so we generally expect the second round to be quicker than the first one. This expectation is also met in the current user study: even though the number of participants increased between the two rounds (from 5 to 6), the first one was still about 10 minutes longer. So we suggest that it is a good design practice to involve the artist in the group game from the second round and on. Being aligned with the group's inherently quicker tempo, this design choice will result in reducing the duration of the artist's involvement per each group.

A full-round commitment may afford a wealth of social interactions between the artist and the participants, yet its high duration still poses important scaling limitations. Furthermore, it is important to consider that a variety of interrupts may occur in real world conditions, directing the artist's attention away from the group. For instance, such an interrupt took place during the 2nd playtesting session of our study. Under one of the voting phases, the artist engaged into a discussion with an external (to the study) visitor of his exhibition. In the meantime voting was completed by all players and the group remained gathered, waiting for the artist to re-join. After a few minutes the facilitator prompted the group to move on with the Explanations phase, suggesting that the artist would be able to catch-on later. The group members turned out this option and preferred to wait the artist instead. About five minutes later the artist returned and it was only then that the group proceeded to the next game phase. This incident was brought up in the interview section, to discuss the artist's reflections over partial game commitment schemes. Considering the game event scenario, we expect that members of other groups may be approaching the artist at any time, asking for instance clarifications and answers related to their group

discussions, or engaging in individual short conversations with the artist.

Would it make sense to account for such situations, enabling the artist to temporarily redraw from a game, skipping a turn or two, and re-join afterwards? The artist was opposed to this concept and, focusing on the particular occasion he stated that he really liked that the group decided to wait for him. He explained that *“It would otherwise be unfair for some of them”*, considering that scoring was maintained during the game round. Reflecting on the visitors’ perspective, we identify an additional shortcoming of this approach. Since most of the participants were strongly enticed by the idea of sharing the stories they make with the artist, if one or two of them did not have the opportunity to do so they would feel that they were left out from the process and would be probably disappointed. For instance, when asked about it in the interview section, Participant #5 commented aloud: *“That would be horrific!”*. So we conclude that the round commitment scheme seems not to leave any space open for turn skipping actions by the artist. Instead, it poses the need for handling a strictly sequential group entering and exiting flow for the artist’s role. The artist enters a group and plays a round; when the round ends, the artist exits the group and then needs to somehow find another group which is about to start a new game round. When a matching group is found, the artist joins it and participates in a fresh game round.

With respect to the mobile experience design that we have been implementing to support the group game, the artist performs the same game actions as the rest of the players, using his/her personal mobile device. However, to support the artist’s transitioning between different groups, the mobile design has to account for flexible group joining and exiting mechanisms. The application needs to guide the artist in the dynamic group-switching process, implementing for instance run-time scheduling of the simultaneous group games, informing about the state of the game sessions that are currently evolving in the gallery’s space, and suggesting which group to enter and when.

In the interview section, we asked the artist if he would be interested in a more relaxed participation scheme that would enable him to fluidly move between the groups, observing the players and the stories they make, but without participating in the game scoring-wise. The artist was highly interested in this option, expressing his willingness to have a hands-on experience at an upcoming exhibition. In the next section we present a preliminary experience design to support this type of involvement for the artist’s role.

4.2. The Artist as “Guest” in the Group

To cope with the scaling limitations of the full-round commitment scheme, and considering the potential interrupts that may occur in real world conditions (particularly as the number of participating visitors

grows), we propose an experience design for the game event scenario which provides significant flexibility to the artist.

The participants will be informed that the artist will be walking around them, watching the different groups playing the game and occasionally joining them shortly as a “Guest”. In contrast to the full-round commitment approach described above, the artist is never registered as a group player: the artist does not get a score and his/her actions do not affect the players’ scoring results. An example use case scenario is sketched out in the following:

‘The artist, let’s call him Stefanos, walks in the gallery and approaches a group which at that moment is crossing the Explanations phase of their group game. Stefanos decides to stay “behind the scenes” and listen to the players’ reflections over his artworks without commenting or somehow intervening. When all player votes are revealed, scoring results get displayed on the group members’ mobile devices. Then Stefanos comes closer and asks *“Who is winning?”*, initiating a conversation with the group. Soon a player’s device starts ringing (let’s call that player Helen), notifying her that she is the Storyteller in the current turn. Helen had her story prepared during previous turns so she starts narrating right away. Stefanos listens to the story and then, almost instantly, lifts up the post-it (that he had been holding in his hand) and notes down the name of the painting that matches Helen’s story. The Voters move away from Helen and Stefanos, approaching the artworks to have a better look at their details. Stefanos sticks his post-it on his blouse, keeping it covered. Helen asks Stefanos which artwork he voted for. Stefanos looks around and sees that there are no co-players nearby, so he replies with a question: *“I cannot tell you. But please tell me, which is the artwork behind your story?”*. Helen reveals her choice and explains him her thoughts.

The Voters are starting to gather around Helen, as they were instructed by their individual devices when completing their voting action. When gathered, the group enters the Explanations phase. The Voters’ selections get displayed exclusively on Helen’s personal mobile device, so she announces them to the group, leading the vote revealing process. At the end of it, she says: *“Stefanos has also voted, but he hasn’t told me which one.”* Then Stefanos uncovers his post-it and shares his personal choice and reasoning with the whole party. After a short discussion, Stefanos departs from the group and starts approaching another one.

In the way, he notices one player “shaking” his personal device (a motion-based interaction required to enter a player’s vote into the app). Stefanos stops and asks that player (let’s call him John) *“What did you just vote for?”*. John shares with Stefanos the story that was previously narrated by the Storyteller of his group, and explains why he thinks it matches the painting he voted. Then Stefanos takes again out his post-it, writes down his own vote for the story and follows John to his group

gathering. He gets introduced to the new group and joins in directly at the Explanations phase, following its evolution as he did with the previous group.'

In the described example we observe that digital and physical media are used in a combined way, clearly reflecting the proposed separation between the "player" and the "guest" roles: committed game players utilize mobile devices to perform game actions, while guests use post-its and pens. In essence, the use of graphical material by the artist is not really necessary for performing the described actions (since the artist does not participate in scoring there is no reason to note down his selection beforehand). The main reason we employ post-its is for visually signaling the artist's participation in a group's Voting phase, with the objective to advance social interactions between the artist and the group members.

By joining each group for more or less one round, the artist is enabled to interact with several groups that are playing the game simultaneously. At the same time, different expectations are formed from the visitors' perspective. The feeling of being "left out" (occurring in case of turn-skipping at full-round commitment) gets replaced with a sense of "being lucky" (if the artist joins during "my" Storyteller turn). However, discussing the proposed scenario with some of the user study participants in follow-up interviews, we observe that a similar concern was again raised: *"It is important to ensure that the artist will manage to go through ALL groups in this case. I would be disappointed if he didn't join my group at all"*, said Participant #5. Hence, we again identify a potential need for groups' state monitoring and recommendation functionalities, to support the artist's role in this process.

The social effects of the proposed "artist as group guest" approach remain open for investigation. Does this form of involvement add value to the visitors' experience? Does it cultivate fulfilling interactions with the artist, or is it too short in order to have notable impact on visitors' experience? In our next steps we plan to experimentally evaluate this form of involvement under a real-world, game event scenario, comparing its effects with respect to full-round commitment schemes. Nevertheless, we stress out that the two approaches are in essence complementary rather than competing, since they are meant to address different crowding conditions. We expect that full-round commitment by the artist will cultivate deeper and more personal interactions with the group than the guest-based approach. So when the number of visitors in the gallery's environment remains low enough, the "artist as player" scheme provides probably the best way to go. Yet when crowding increases, the flexibility offered to the artist through his/her guest-based involvement provides a promising workaround in order to cope with practical scaling limitations.

5. Conclusions

In this paper we present our approach to foster the communication between groups of visitors and art creators through their joint participation in a social storytelling game. We propose two main different approaches for involving the artist in the described social group game, namely: as a committed player, and as a "guest" member in the players' group. The former approach was tested through a user study (using physical materials), showcasing promising potential to cultivate social interactions between artists and visitor groups by jointly playing an entire game round in the exhibition's environment.

Building upon the game-event scenario, which had been identified as a prominent use-case in our prior work and was also proposed by the artist at the current study, we pinpoint important scaling limitations and discuss how to address the challenges raised in this setting. In that direction we explore varied levels and types of game commitment for the artist's role, finally reaching the "Artist as a Guest" approach. We sketch out a hybrid mobile-based design that supports structured group games along with flexible, free-form, playful social interactions between the artist and the visiting game groups, enabling the artist to quickly switch between different groups and thus interact with several visitors in a limited time.

In our future work we plan to invite more artists in this process, aiming to capture a variety of different perspectives from the artists' side, and observe how these shape the game experience. We will further investigate the different roles that the artists may take, besides playing the game similarly to ordinary players. Following a participatory design approach, we will form a group of interested artists who will collaboratively consider all the stages of the experience, from design to delivery, as well as post-play analysis.

The use of game designs and technologies for advancing social interactions, not only between groups of visitors but also between visitors and artists, is a young and exciting field. We believe that work in this direction may have a high social impact, shaping new forms of cultural participation.

Acknowledgements.

This research has been co-financed by the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE (project IIIΣETO code:T1EDK-05362).

References

- [1] Jafari, A., Taheri, B., & vom Lehn, D. (2013) Cultural consumption, interactive sociality, and the museum. *Journal of Marketing Management* 29(15-16), 1729-1752.
- [2] Szymanski, M. H., Aoki, P., Grinter, R. E., Hurst, A., Thornton, J. D., & Woodruff, A. (2008) Sotto Voce: Facilitating Social Learning in a Historic House. In

- Proceedings of Computer Supported Cooperative Work (CSCW)* 17(1), 5-34
- [3] Pau, S. (2017) Audio that moves you: experiments with location-aware storytelling in the SFMOMA app. In *MW2017: Museums and the Web 2017*. Published January 31, 2017. Consulted January 20, 2020. <https://mw17.mwconf.org/paper/audio-that-moves-you-experiments-with-location-aware-storytelling-in-the-sfomoma-app/>
- [4] Wecker, A. J., Kuflik, T., Lanir, J., Stock, O. (2012) Evaluating mobile projectors as a shared display option for small groups. In *Proceedings of Conference on Human Factors in Computing Systems, CHI'12 Extended Abstracts*, 2543-2548, doi>10.1145/2212776.2223833
- [5] Callaway, C., Stock, O., & E. Dekoven. (2014) Experiments with mobile drama in an instrumented museum for inducing conversation in small groups. In *ACM Transactions on Interactive Intelligent Systems* 4(1), Article 2.
- [6] Katifori, A., Kourtis, V., Perry, S., Pujol, L., Vayanou, M., Chrysanthi, A. (2016) Cultivating mobile-mediated social interaction in the museum: Towards group-based digital storytelling experiences. In *MW2016: Museums and the Web 2016*. Published January 15, 2016. Consulted January 20, 2020, <https://mw2016.museumsandtheweb.com/paper/cultivating-mobile-mediated-social-interaction-in-the-museum-towards-group-based-digital-storytelling-experiences/>
- [7] Vayanou, M., Ioannidis, Y. (2017) Storytelling games with art collections: Generic game-play design and preliminary evaluation through game testing sessions. In *Proceedings of the 9th International Conference on Virtual Worlds and Games for Serious Applications (VS-Games)*, pp. 264-271. (2017) doi: 10.1109/VS-GAMES.2017.8056612
- [8] Vayanou, M., Ioannidis, Y., Loumos, G., Kargas, A (2019) How to Play Storytelling Games with Masterpieces: From Art Galleries to Hybrid Board Games. In *Journal of Computers in Education*, <https://doi.org/10.1007/s40692-018-0124-y>
- [9] Vayanou, M., Ioannidis, Y., Loumos, G., Sidiropoulou, O., Kargas, A. (2019) Designing Per-formative, Gamified Cultural Experiences for Groups. In *Proceedings of CHI EA '19 Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems* (2019), doi>10.1145/3290607.3312855
- [10] Vayanou, M., Antoniou, A., Loumos, G., Kargas, A., Kakaletris, G., Ioannidis, Y. (2019) Towards Personalized Group Play in Gallery Environments. In *Extended Abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion Extended Abstracts (CHI PLAY '19 Extended Abstracts)*. Association for Computing Machinery, New York, NY, USA, 739–746. DOI:<https://doi.org/10.1145/3341215.3356313>
- [11] Rohrer, C (2014). When to Use Which User-Experience Research Methods. Consulted January 2020, <https://www.nngroup.com/articles/which-ux-research-methods/>
- [12] Benford, S., Giannachi, T., Koleva, B., Rodden, T. (2009) From Interaction to Trajectories: designing coherent journeys through user experiences". In *Proc. of Conference on Human Factors in Computing Systems, CHI 2009*, ACM.
- [13] Laurillau, Y., and Paternò, F. (2004) Supporting Museum Co-visits Using Mobile Devices, *Proceedings Mobile HCI 2004*, Glasgow, September 2004, Lecture Notes Computer Science 3160, pp. 451-455, Springer Verlag.
- [14] <http://www.capturethemuseum.com/>
- [15] Sintoris, C., Stoica, A., Papadimitriou, I., Yiannoutsou, N., Komis, V., & Avouris, N. (2010). MuseumScrabble: Design of a Mobile Game for Children's Interaction with a Digitally Augmented Cultural Space. In *International Journal of Mobile Human Computer Interaction (IJMHCI)*, 2(2), 53–71. <https://doi.org/10/cfznzd>
- [16] Dini, R., Paternò, F. and Santoro, C. (2007). An Environment to Support Multi-user Interaction and Cooperation for Improving Museum Visits through Games. In *Proceedings of the 9th International Conference on Human Computer. Interaction, Mobile Devices and Services*, pp. 515–521. ACM Press, Singapore.
- [17] Wray, T., Ingimundardottir, E., Stanciauskaite, G., Wray, T., Løvlie, A. S. (2018) Word by Word: A mobile game to encourage collaborative storytelling within the museum. In *MW18: MW 2018*. Published February 16, 2018. Consulted January 20, 2020. <https://mw18.mwconf.org/paper/word-by-word-a-mobile-game-to-encourage-collaborative-storytelling-within-the-museum/>
- [18] Schroyen, J. Gabriëls, K., Teunkens, D., Robert, K., Luyten, K., Coninx, K. and Manshoven, E. (2009) Beyond Merely Information Provisioning: A Museum Handheld Guide Based on Social Activities and Playful Learning. In *Nordisk Museologi*. doi: 10.5617/nm.3256.