Selected Articles from the 2017 International DIGRA Conference

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ToDiGRA

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Martin Gibbs

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EDITOR'S INTRODUCTION TO THE SPECIAL ISSUE

The 2017 Digital Games Research Association International Conference (DiGRA 2017) was held in Melbourne, 3-6 July 2017. Swinburne University of Technology, RMIT University and The University of Melbourne joined together to host the conference.The DiGRA International Conference series offers a venue for research from all disciplines to present and discuss games-related research. Founded in 2003, DiGRA is the premiere non-profit international association for academics and professionals who research both digital and analogue games and

associated phenomena. Since its beginnings, it has encouraged high-quality research on games, and promotes collaboration and dissemination of work by its members.

DiGRA 2017 received 55 full paper submissions. From these submissions, 21 full papers were selected for publication in the DiGRA 2017 conference proceedings and to be presented at the conference. All submitted full papers were subjected to a peer review by an independent international reviewing committee. All full papers were reviewed in their entirety by at least three reviewers. DiGRA 2017 also received 97 extended abstract submissions. From these submissions, 67 extended abstracts were selected for presentation at the conference. All extended abstracts were peer reviewed by a panel including track chairs, program chairs and other reviewers as required. DiGRA 2017 received 10 panel proposals. From these proposals, 7 panels were selected for participation in the conference. Panels were selected by a panel of the conference and program chairs.

From the 88 full paper and extended abstract submissions, 10 submissions were invited to participate in this special issue. Papers were selected from the conference submissions that were given the highest rating by reviewers in each track. Track chairs were also asked to recommend the best submissions from each track. Effort was made to select submissions from across all tracks in the conference to reflect the diversity of submissions to the conference in the special issue. Papers for the special issue were each reviewed by two reviewers and a meta-reviewer. Feedback from reviewers was used by authors to revise and rework the seven papers in this special issue.

In the first paper in this collection, **Fraser Allison**, **Ewa Luger** and **Katja Hofmann** report on an observational lab-based study of high school students playing Minecraft alongside a companion AI character that learned from their actions and inputs. **Mia Consalvo** and **Christopher Paul** explicate the concept, value-crafting, through an examination of the way indie game

developers rhetorically construct the heterogenous array of practices they use in making, marketing and selling their games as being successful in some fashion. **Emily Crawford** explores collective anxieties concerning the fallibility and limitations of digital technologies through an examination of fan fiction narratives of horror and game "glitches". **Emilie Reed's** paper examines the tensions and intersections between spectating and interacting experienced by visitors to museum exhibitions of digital games. **Alexandra To** and her co-authors discuss the design and playing experience of a board game, *Outbreak*, which they designed to create "comfort" around curiosity through the mitigation of aversion to failure, and "comfort" around questioning to further support players' curious engagement. **José Antonio González Zarandona**, **Adam Chapman** and **Darshana Jayemanne** consider the ethical challenges with representing the destruction of historically and nationally significant heritage sites in video games. Finally, **Jasper van Vught** and **René Glas** revisit and reconsider important methodological concerns with using play as a research approach to studying games. They move beyond recommendations around reflexivity to more fully consider issues around playing choices and contexts of play.

The papers in this special issue highlight the strength and breadth of research and scholarship in the game studies more broadly and at DiGRA in particular. We hope that you find this special issue interesting and thought-provoking. Finally, I would like to thank the other program chair, Casey O'Donnell and the general chair, Marcus Charter, for their assistance with the DiGRA 2017 program.

ACKNOWLEDGMENTS

We wish to thank the anonymous reviewers, the volunteers, track chairs and conference organizers who donated their time and effort to making DiGRA 2017 a successful conference. We would also like to thank conference sponsors for their support.

1.

How Players Speak to an Intelligent Game Character Using Natural Language Messages

Fraser Allison, Ewa Luger, & Katja Hofmann

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***All authors were at Microsoft Research Cambridge, UK, during data collection stage.**

ABSTRACT

AI-driven characters that learn directly from human input are rare in digital games, but recent advances in several fields of machine learning suggests that they may soon be much more feasible to create. This study explores the design space for interacting with

such a character through natural language text dialogue. We conducted an observational study with 18 high school students, who played Minecraft alongside a Wizard of Oz prototype of a companion AI character that learned from their actions and inputs. In this paper, we report on an analysis of the 186 natural language messages that players sent to the character, and review key variations in syntax, function and writing style. We find that players' behaviour and language was differentiated by the extent to which they expressed an anthropomorphic view of the AI character and the level of interest that they showed in interacting with it.

Keywords

Natural language, AI, human-agent interaction, Wizard of Oz, Minecraft

INTRODUCTION

In recent years, advances in machine learning have driven rapid improvements in artificial intelligence (AI) techniques, both within and outside of videogames. Game worlds make effective testing grounds for learning AI due to their ability to simulate real-world challenges in incremental, constrained stages in a controllable and measurable environment ("Why AI researchers like video games" 2017). As a result, games have been the focus of a great deal of AI research involving machine learning (Yannakakis & Togelius 2015; 2017), from digitised board games (Silver et al. 2016) to real-time arcade games (Mnih et al. 2015; Shaker et al. 2013) and three-dimensional gameworlds that more closely approximate physical space (Johnson et al. 2016).

Despite this, game developers have been slow to take up machine learning techniques for in-game character AI.Games that do feature AI characters that learn from player inputs have been either notable for their novelty, such as *Black & White* and *Forza Motorsport*, or confined to academic projects, such as *NERO:*

NeuroEvolving Robotic Operatives (Stanley et al. 2005). Both the tools and the imagination needed to change this are surfacing. On the tools side, several companies including Unity (Juliani 2017) and Microsoft (Johnson et al. 2016) have released open-source platforms that facilitate the training of machine learning agents in game environments, and these platforms can be adapted for imitation learning (in which agents learn from actions demonstrated by a player or another agent) and reinforcement learning (in which agents learn from a reward signal provided by the environment, such as a game score). On the imagination side, the idea of AI characters that learn from players is becoming more prevalent in games. For example, the 2017 stealth-action game *Echo* is built around the design conceit that enemy characters learn and replicate the actions taken by the player (Robertson 2017). And in 2014, *Middle-Earth: Shadow of Mordor* featured a system in which individual enemy characters were permanently transformed and adapted by their encounters with the player (Taljonick 2014). However, these conceptual examples do not appear to be driven by machine learning technology in any real sense. Shaping the user experience for a game character that actively learns through interaction with a player remains challenging, as there are concerns that the interaction may be inconsistent, difficult for players to understand, or simply not fun (Muñoz-Avila et al. 2013; Yannakakis & Togelius 2015).

The present study is positioned as a pilot study designed to support the long-term aim of developing AIs that can learn to make sense of complex game environments (Johnson et al. 2016), especially in multi-agent settings that include AI and human players. Its purpose is to take a speculative look into the near future, and consider what the user interface considerations would be for an AI character that dynamically changes its behaviour based on what it learns from the player. As this character would have the potential to be less predictable and more adaptable than a character with static AI, an ideal interaction modality should allow for a wider variation of player inputs than a traditional gamepad. It should also be expressive enough to convey detailed state changes

in the AI back to the player, including ones that may not be obvious in the character's actions. Despite this increased scope for complexity, it should remain intuitive enough for the player to understand and formulate new input combinations without needing to spend a great deal of time learning how to do so. A natural language dialogue system is a common proposal for an interface that meets these criteria, as evidenced by the near ubiquity of spoken interaction among science fiction AIs, from the androids in *Westworld* to Holly the ship's computer in *Red Dwarf*.

Natural language interaction presents an intriguing mode for interacting with relatively independent and teachable AI agents. In principle, it could give players great flexibility to direct and interact with an AI character in an "off-script" fashion, without the need to learn and navigate an extensive graphical or physical user interface. And language understanding systems have improved rapidly in recent years, driven by the success of neural network models of machine learning.[1] Machine reading comprehension has approached and even exceeded human standard in some constrained scenarios (Eckersley et al. 2017), although open domain language understanding by computers remains far below human level. However, natural language interaction also introduces design challenges. For example, the conversational mode of dictating action to a computer is a departure from the widely accepted interaction paradigm of "direct manipulation" (Shneiderman 1982), in which the player's point of control is represented as a clear and direct link between the physical controls in their hands and a singular locus of manipulation in the computer system or gameworld (Bayliss 2007). This unfamiliarity and the unbounded nature of natural language can make it difficult to immediately formulate the "right" thing to say, and can require a process of learning how to adapt one's phrasing to the system

1. Many of the recent improvements in natural language processing have come from the use of neural network models, particularly recurrent or recursive neural networks (RNN), and specifically variations of long short-term memory (LSTM) and gated recurrent unit (GRU) RNN models. For a full explanation of the use of neural network models in natural language processing, see Goldberg (2016).

(Luger and Sellen 2016, 5289). On the developer's side, the openness of natural language can make it difficult to anticipate what kind of syntax and concepts players will use.

To contribute towards addressing these challenges, we conducted a study of players interacting with an autonomous, learning-capable game character using natural language. This study employed the Wizard of Oz research method, which involves presenting participants with a convincing replica of an automated system in which some of the functions are secretly operated by a human (Kelley 1983). We designed a conceptual prototype of a plausible near-future AI agent that learns from player actions and uses natural language text messages to communicate, which we named help_bot. We invited participants to perform tasks in the videogame, Minecraft, with the assistance of help_bot, and provided intentionally minimal instructions for how to do so, so that we could observe the ways that players spontaneously attempted to engage and speak with an agent of this type. We conducted a content analysis on the natural language messages that players sent to help_bot, to study what type of syntax they used, what kind of commands they gave and how the use of language as opposed to traditional game controls created opportunities and problems for the interaction.

Given the rapid progress in machine learning-based natural language processing, it is our belief that these techniques have the potential to dramatically change in-game interaction using natural language. However, it is extremely unlikely that the available technology will immediately jump to human-level language understanding; much more partial and constrained language interactions appear likely in the near term. Therefore, potential usage scenarios and player perceptions and behaviours need to be thoroughly understood, to allow game developers to craft language-based interactions that suit players' expectations and desires within the constraints of the available technology. We see the key contribution of this work in mapping this space of player

perceptions and behaviours, paving the way towards the required understanding and development of novel designs.

PRIOR WORK

In the past decade, there has been a steady increase of research interest in AI applications in digital games (Yannakakis & Togelius 2017, 19-20). Much of this work has focused on training game-playing agents using reinforcement learning (RL), in which an agent is taught to associate combinations of actions and environmental conditions with a reward signal (such as the character's health or a score counter), and learns through trial and error to maximise the reward signal through its choice of actions (Sutton and Barto 1998). Famously, Google DeepMind used a combination of RL and supervised learning from expert human moves to train a Go-playing program (Silver et al. 2016) that beat one of the world's best human Go players, Lee Sedol. RL research is also being conducted to train agents in real-time digital games, from older Atari 2600 games (Bellemare et al. 2012) to more recent games with complex spatial environments such as Doom (Kempka et al. 2016), Starcraft (Farooq et al. 2016) and Minecraft (Johnson et al. 2016). A related branch of research has looked at developing agents that learn from player actions, either from pre-recorded play data or through direct interactions with players. The goal of this work can be to learn higher-level performance strategies, create more convincingly human-like game characters or adapt to individual players' preferences and playstyles (Bakkes et al. 2012).

Studies in interactive machine learning look at scenarios in which a human actively provides feedback to a learning agent to update its behaviour. Researchers in this area have consistently found that users exhibit strong preferences for teaching styles that do not always align with the learning model of the agent (Amershi et al. 2014). Whereas RL-based agents are often designed to learn from explicit feedback on their recent actions, human teachers

give relatively little explicit feedback, and instead focus on communicating the desired behaviour conceptually through demonstrations and positive prompts (Amershi et al. 2014; Kaochar et al. 2011; Knox et al. 2012). When required to give repetitive and simplistic input, users often experience impatience and frustration, and a resulting decline in their performance as teachers (Cakmak et al. 2010; Guillory and Bilmes 2011). In a study by Fischer et al. (2013), human users were better at adapting their teaching behaviour for a learning robot when the robot's feedback mimicked the human's social behaviour (in the form of gaze), which indicates that their mental models of how the robot was learning and attending to things were influenced by their knowledge of human learning and attention. Similarly, a study by Koenig et al. concluded that human users' failures to adapt their teaching behaviour effectively based on feedback from a robot learner resulted from a "tendency to map a human-like model onto the capabilities of the robot" (2010, 1111). A review of interactive machine learning studies by Amershi et al. (2014) concluded that a wide range of interactions are possible for human teaching of agents, but studying the human users of these systems will be critical to ensuring their success.

A common barrier to studying user behaviour with both intelligent agents and natural language interfaces is the difficulty in implementing such systems to a high level of reliability. When the research question is not how users respond to the current state of the art but how they would respond to a hypothetical version of the technology, implementing the technology can be prohibitively difficult or expensive. To circumvent this, researchers in human-computer interaction often implement Wizard of Oz prototypes instead. In the Wizard of Oz method, an interface is presented to the user as being fully automated, but is operated out of sight by a human facilitator without the user's knowledge (Maulsby et al. 1993). This approach, first developed for studying user responses to natural language interfaces (Kelley 1983), is also commonly used for studying user interactions with intelligent agent systems (Goodrich and Schultz 2008; Riek 2012). Bernotat et al. (2012)

used a Wizard of Oz design to test how people responded to a futuristic "smart home" without specific instructions, and found that most users defaulted to speech control, demonstrating that language-based interaction is associated with intelligent systems in the public imagination. In another Wizard of Oz study, Xu et al. determined that users could recognise an unsignalled change in the behavioural pattern of an agent, and adapt their own behaviour to suit. These studies demonstrate that the Wizard of Oz approach is well suited to an exploration of how users interact with intelligent agents, particularly in language-based interactions.

A great deal of research has been conducted on natural language interfaces, but for the purposes of this study we are primarily interested in studies of user behaviour in natural language interactions with embodied virtual characters. Most prominent in this field is the work of Cassell, who formulated the concept and early prototypes of the "embodied conversational agent" (2000). Cassell focused on the role of non-verbal behaviours in sustaining the experience of human-like conversation, and the ways in which these factors make conversation fundamentally multimodal. Mateas and Stern (2005) incorporated expressive and affective embodied conversational agents into an interactive drama game, Façade, which was built around natural language interactions; Sali et al. (2010) compared this version of Façade with alternative versions wherein the player selected dialogue responses from a menu rather than typing their own, and found that although the natural language interface generated frustrating errors and reduced players' feeling of control, it was still the most preferred modality as it provided the greatest sense of presence and engagement. More recently, Lessard has produced several natural language interaction games designed around "conversational puzzles" (2016, 6), making conversation itself more of a game mechanic than a pseudo-social interaction. Lessard concludes that the natural language interaction in his games is easy for players to understand and to start playing with, but that the highly scripted nature of current game dialogue systems restricts the ability of games to take

advantage of more emergent gameplay possibilities that would theoretically be possible with natural language.

WIZARD OF OZ CHARACTER DESIGN

Following a review of literature on AI research in games and other fields of application, we extrapolated a set of abilities that we thought represented a reasonable approximation of what an autonomous agent in a game-world such as Minecraft could be made capable of within a few years' time. We named this hypothetical agent help_bot, and defined its abilities in a manner that we could represent through a human-controlled character.

Help_bot could "see" the same visual input as a player, and use this vision to understand and navigate unfamiliar terrain. It could recognise simple objects by sight within the game-world, including objects that were defined items in that game (such as the block types in Minecraft) as well as geometric shapes and patterns formed from the arrangement of objects in the game. It could add new objects to its recognised list through being given labelled examples (such as learning to associate a new shape with the label "pyramid"). It could learn and imitate behavioural patterns by watching the actions of a player-controlled avatar, and update its behaviour based on positive and negative feedback from the player, as well as behavioural prompts such as being hit or being given a particular tool or material. It had a limited ability to infer a higher-level goal from a player's actions, such as predicting what larger shape a player might be constructing from the initial placement of a few blocks.

Notably, help_bot was designed to be a "friendly" or companion character, in contrast to the majority of AI-controlled characters in digital games who take an "enemy" or oppositional role. Help_bot's behaviour followed a simple loop. Its starting state was to follow the player's avatar from a short distance and observe what they did. Periodically, it would categorise the player's current action (e.g. building with bricks) and infer a short-term goal of

that action (e.g. building a straight wall out of bricks). Help_bot would then attempt to assist in that task by continuing the action, such as by adding more bricks onto the wall to extend it in the same direction. At irregular intervals, or when prompted by direct interaction by the player, help_bot would reassess what the player was doing and either continue its current action or choose a new action accordingly.

The player could override this behaviour by sending help_bot messages through Minecraft's built-in chat channel. Help_bot understood natural language input through this channel, within constraints. It could distinguish between commands, questions, statements and acknowledgements and choose an appropriate response. It looked for verbs in a message that matched an action in its behavioural repertoire, such as "build", "follow" and "attack", and it looked for a grammatical subject and object to determine what the verb referred to. In this way, long or fragmented sentences could have their meaning inferred from key elements without fully understanding every word, but more nuanced or obscure meanings would not be understood. Messages that were understood prompted standard responses from help_bot: <ok> for commands, <done> after the command was completed, and <yes> or <no> in response to questions. Messages that were not fully understood prompted a request for clarification: <show me where>, <show me how> or <?> (see *Responses to prompts for additional information*).

In accordance with the Wizard of Oz research protocol, help_bot was secretly controlled during the study by a researcher in a separate room. As described above, the Wizard of Oz approach is often used for research on intelligent agent and natural language system prototypes (Goodrich and Schultz 2008; Riek 2012). Indeed, the method was first developed for studying the responses of "computer-naïve, first-time users" (Kelley 1983, 193) to a natural language application. One of the considerations of this method is that the deception should not be too obvious, which goes hand-in-hand with ensuring that the prototype is not unrealistically

high-performing. In our case, the researcher controlling help_bot was instructed not to make its behaviour appear too intelligent or natural. They controlled its movements entirely through a keyboard, rather than a mouse and keyboard, to reduce its fluidity of movement. Occasionally, the researcher made help_bot make deliberate "errors" by choosing actions that were plausible but against the player's apparent intentions, such as building over an open space that the player had created. This was to reinforce the impression that help_bot was computer-controlled, and to allow us to observe how players attempted to correct unwanted behaviour. To further support the impression of being an AI-controlled character, help_bot was given a robotic appearance.

METHODOLOGY

We recruited students from two high schools in the United Kingdom to participate in an observational user study. Excluding two participants who dropped out, we had 18 participants (11 female, 7 male) aged between 11 and 15 complete the study. As a rough indicator of sufficiency, this is equal to the mean sample size for in-person user studies presented at the ACM Conference on Human Factors in Computing Systems in 2014 (Caine 2016, 986). Parental consent was obtained for all participants, and parents were given the option to be nearby and observe the study. All participants were required to have played Minecraft before, and their level of experience varied from a few hours to over a hundred hours of play.

The study was conducted across two weeks, with each participant in a separate session. Each session lasted approximately 90 minutes. After greeting the participant and their parent and explaining the study, the facilitator showed the participant to a private room with a computer running Minecraft and a video camera. Participants were asked whether they would like to opt out of having their image appear in any publications about the study, which two did. The facilitator then interviewed the participant

briefly about their experience with Minecraft: how often they played, which game modes and activities they preferred, and whether they played in single-player or multiplayer mode. Each participant was set three building tasks to complete in sequence, in a pre-saved Minecraft gameworld created for the purpose.

The first task was to build a model boat, without assistance. This was a warm-up task, which gave the player a chance to get used to the game controls if they needed to, and to become accustomed to the study environment. It also allowed the researchers to observe how the player behaved in "normal" solo Minecraft play, to understand their habits and strategies so that they could be contrasted with how they played in the subsequent tasks. Five minutes was allowed for this task.

After the first task, the facilitator explained that they would be introducing an AI assistant character named "help_bot" into the world for the following tasks. Help_bot was described as an experimental prototype developed by the researchers, which could learn how to act in Minecraft by watching and interacting with players. Players were told that help_bot would try to assist them in their next building task, and that they could teach it or show it what to do if they wanted.

In either the second or third task, the player was also told that help_bot could understand messages that were sent through Minecraft's chat function. If the text interaction was introduced in the second task, for the third task the player was told that the text interaction was disabled. The order of the language and non-language interaction conditions was rotated, ensuring a balanced allocation of age, gender and previous Minecraft experience for participants.

The facilitator deliberately avoided giving specific instructions or examples of how to interact with help_bot. Before the non-language-input condition, the player was told that help_bot would learn from what it saw them do; that it would try to help them

with whatever they were doing; and that they could teach it things or show it what to do. Before the language-input condition, the player was again told that help_bot would learn from what it saw them do, and also what they wrote in the chat channel; that it could understand normal sentences; and that they could try to tell it what to do, teach it things, or give it feedback on what it had done. The instructions did not specify that players were required to interact with help_bot, and once the task had begun the facilitator did not direct the player further except to answer questions. Players who ignored help_bot or lost interest in their building task and moved on to other activities were allowed to do so.

Both the second and third task lasted 15 minutes (although players were allowed to go overtime by up to five minutes to finish what they wanted to do in the game). The instruction for the second task was to build a house, and the instruction for the third task was to add to it with a construction of their choice. After the first eight participants this task was changed, as most participants were familiar with the task of building a house from previous Minecraft experience, and so created it too quickly and often with little planning required. For the remaining participants, the instruction was to build a maze.

After each task, the facilitator conducted a short semi-structured interview with the player, prompting them to explain what they had been thinking at various moments. Players were also asked what they thought of help_bot; what strategies they used when they wanted help_bot to change its behaviour; how well they felt help_bot understood what they wanted, and what made them think so; how playing with help_bot compared to playing with another human; and what features they would change or add. After the final interview, the Wizard of Oz research approach was explained and participants were informed that help_bot had been a human-controlled character. Prior to this debriefing, no participant indicated a suspicion that help_bot may not be computer-controlled.

Content analysis of message logs

Across the 18 sessions of the study, players sent a total of 186 messages through the chat channel. These messages, along with the responses from help_bot, were saved in a log file. We conducted a content analysis on these messages to study the language players had used. These messages were analysed and coded by the first author in an iterative open coding process. Each message was coded according to seven main categories:

- Message syntax (e.g. interrogative)
- Message function (e.g. query)
- Message subject (e.g. “I”, “you”)
- Message direct object (e.g. “me”, “this”)
- Amount indicator (e.g. “a”, “some”)
- Location indicator (e.g. “here”, “back”)
- Repair process (e.g. reformulation)

Our analysis approach was informed by conversation analysis (Sacks et al. 1974), as the high-level goals of this study are to some extent aligned with the goals of conversation analysis. We focus on understanding the structures and patterns that can be discerned among pairs or longer sequences of “utterances” (to use the conversation analysis term), and how the structure of messages relates to the ways in which they are employed to elicit specific actions, rather than pure exchanges of information. We also look at players’ strategies for repairing failures of communication through their messages (Schegloff et al. 1977). However, the full method of conversation analysis is not suitable for this context, as it is substantially concerned with the mutual organisation of dialogue, ordinarily in the form of verbal speech. In this study, by contrast, the organisation of dialogue was one-sided, with the player initiating and directing nearly all of the conversation under the expectation that help_bot would act as a passive responder.

Accordingly, we draw on conversation analysis conceptually in the definition of codes, but pragmatically take a content analysis approach that is more tailored to the log transcript data available.

In analysing the messages as action-oriented inputs, we consider each one as a "speech act" (Searle 1969), intended by the player to serve a functional purpose. We note that this purpose can be different to the literal meaning of the sentence, and so a complete analysis must determine the true function of a message from contextual information. We draw on both the in-game context and players' interview comments to infer the function of each message, and we identify indirect speech acts (Searle 1975) in which the literal and functional meaning of the message disagree.

We do not intend through this analysis to lay down firm or fixed rules of conversational procedure for natural language-based interaction. However, as Button and Sharrock (1995) argue, we believe that examining the function and form of players' spontaneous natural language messages will provide useful guidance for natural language interactions with game characters, by pointing out what naïve players might want or expect such a character to be able to understand and respond to appropriately.

RESULTS

The focus of this paper is on the natural language interactions between players and help_bot. However, these textual inputs were highly multimodal with the players' actions using the traditional game controls, so some discussion of these actions is also required. To capture this, we use the following notation when describing interactions from the study: text inputs in angle brackets, verbal comments in quotation marks, and physical or in-game actions in italics. For example:

Player:<come back and give be the wood>

Help_bot:<?>

Player: “Question mark. So do I have to do every command in one line? Because I did two commands there.”

Player reads their previous message again.

Player: “Oh, because I wrote ‘give be the wood’.”

The intended meaning of a text command was often dependent on the virtual space in which the player’s avatar and help_bot were standing. Some commands directly referred to a visible object, as in <kill the zombie>, while others carried an implicit expectation that they would be carried out in the nearest relevant location, as in <can you get some wood please>. A few commands were paired explicitly with the player’s actions, as in <copy me>, or with help_bot’s actions, as in the following exchange:

Player:<break blocks>

Help_bot mines blocks directly in front of it, leaving other blocks above.

Help_bot:<done>

Player:<there is some at the top>

Help_bot:<?>

Player:<look up>

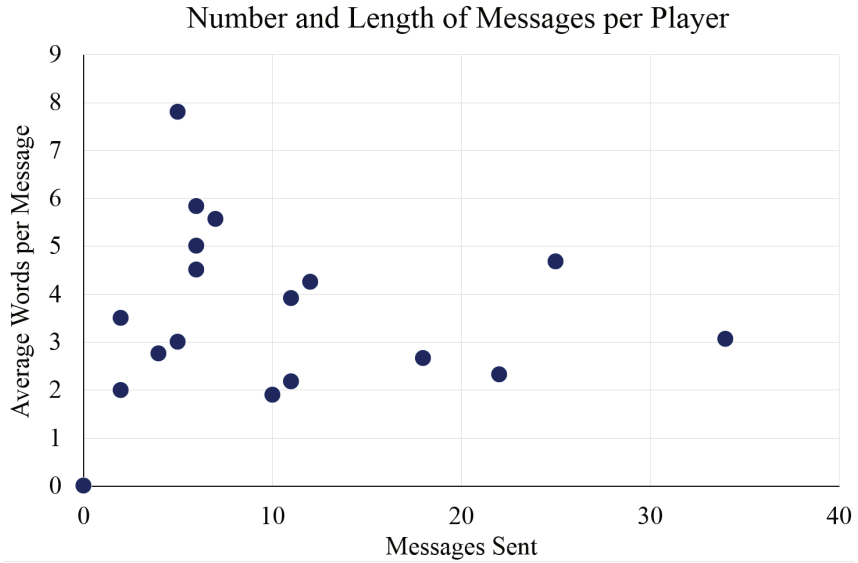

Figure 1: Scatter plot of players in the study by the number of messages they sent (horizontal) and the average length of those messages in words (vertical).

The extent to which players engaged with help_bot through the natural language system varied considerably (see figure 1). Several players sent less than five messages in total, including one who sent none at all. Conversely, several players sent help_bot more than one message per minute across the 15-minute task, with 34 being the highest.A few players wrote full sentences of up to 11 words (see figure 2), including polite phrasings and compound sentences, but the majority wrote primarily in terse phrases that consisted of no more than three words. There was no strong correlation between the length of a player's messages and the number of messages they sent.

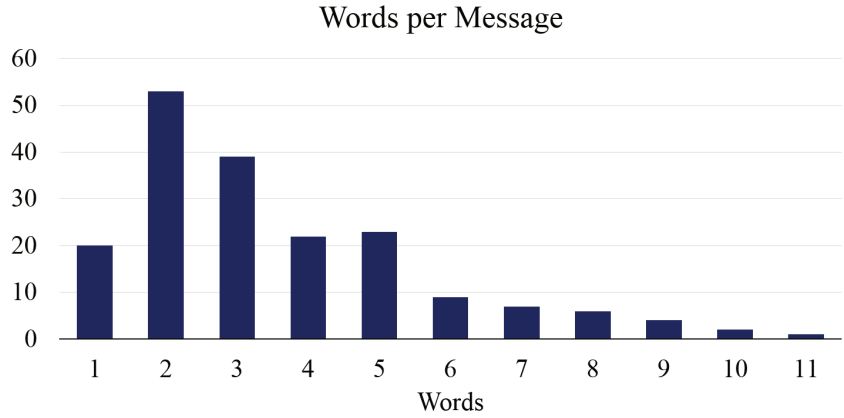

Figure 2:Distribution of messages by the number of words per message.

In the post-task interviews, some players said that they had kept their messages short to be sure that they would be understood. Although they had been told that help_bot could understand normal writing, players pre-emptively avoided longer or more complex sentences on the assumption that they would not be understood, as one player explained:

> "It's quite hard to get the wording correctly to get it to do stuff. Because like when I told it to bring in the material I was going to say 'collect this and give it to me' – I wasn't sure if it would understand that. So you have to be quite simple."

At the same time, however, players were concerned that their messages could be lacking in necessary detail, and that help_bot might make incorrect assumptions due to a lack of specificity in their instructions:

> "[I needed] to be quite simple and not overcomplicate it, so it would understand. [. . .] Probably if I were to say 'collect wood', it might have got *any* wood, so you have to be quite specific with that, what type of wood."

As a result of these conflicting tensions, players often hesitated over the wording of their messages and expressed uncertainty about how to engage help_bot in more complex tasks. A few

players suggested that a customisable menu of commands might be useful for defining some more complicated requests. We observed that the moments of uncertainty often came after a player had begun to type a request, but was unsure how to finish it; a contextual autocompletion function could provide timely assistance.

The exact wording used in messages was diverse. Of the 186 messages sent throughout the study, 128 were unique in their wording. A further 11 messages were sent twice by the same player. Only 12 messages were sent by multiple players, including four that were sent by three different players: <thank you>, <follow me>, <come back> and <build a house>. The latter was influenced by the construction task we assigned the first eight players, which was to build a house. Only two messages longer than three words were used by multiple players: <bring me oak wood> and <give me the wood>.

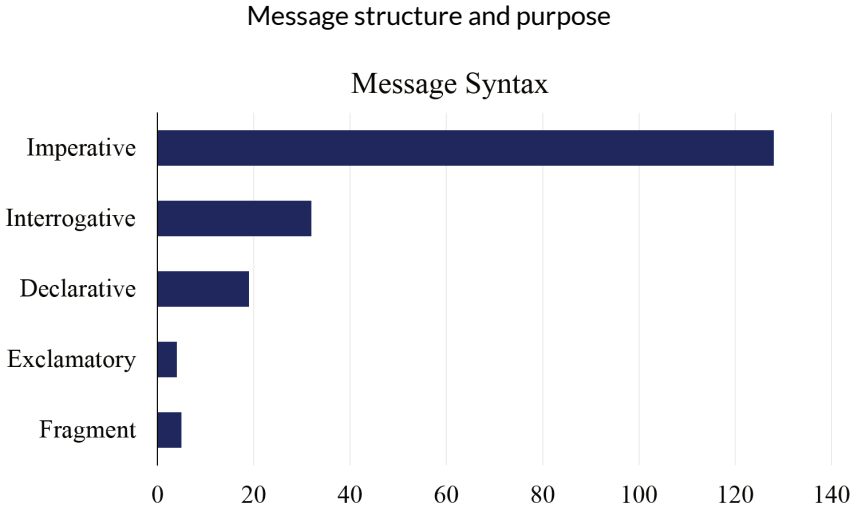

Figure 3:Distribution of messages by sentence type.

Most messages were structured as *imperatives* (see figure 3). These were usually short phrases such as <get stone> and <come here>. Some imperatives were longer, including a few compound

sentences containing multiple commands, such as <come to me and give me the oak wood>. Every imperative message was either directions to undertake an activity (*command*) or directions to cancel the current activity (*stop*). We show the relative proportion of message functions in figure 4.

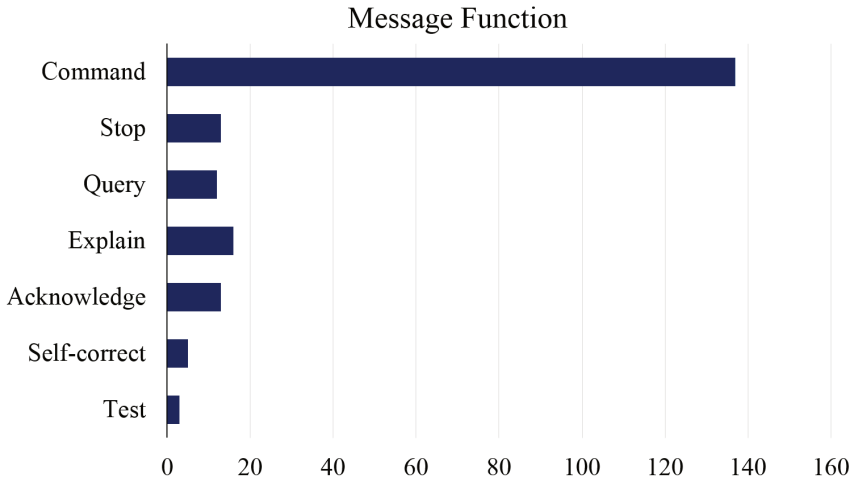

Figure 4:Distribution of messages by intended purpose, inferred from game context and player comments.

A large majority of messages omitted a grammatical subject (see figure 5). This was because most messages were imperatives, and standard English grammars omits the subject in an imperative phrase – the implied subject is the receiver of the message. One message specified its subject by naming help_bot (<help bot come here>). Six messages lacked an explicit subject, because the intended subject was the same as the previous message; we label these as “Antecedent (implied)”.

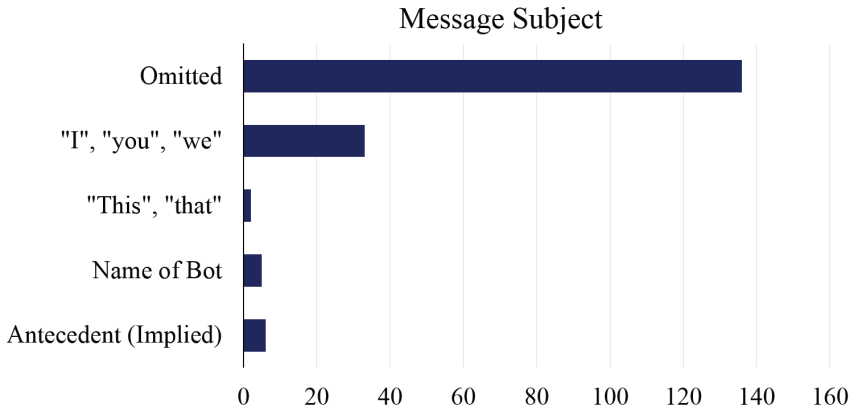

Figure 5:Distribution of messages by intended purpose, inferred from game context and player comments.

The direct object of most messages was indefinite rather than specific, as in <get stone> or <get some stone> as opposed to <get the stone> or <get that stone>. Where the direct object referred to “me” or “you”, this was usually a learning command, as in <copy me>, or an acknowledgement, as in <thank you>. The frequency of each type of direct object is shown in figure 6.

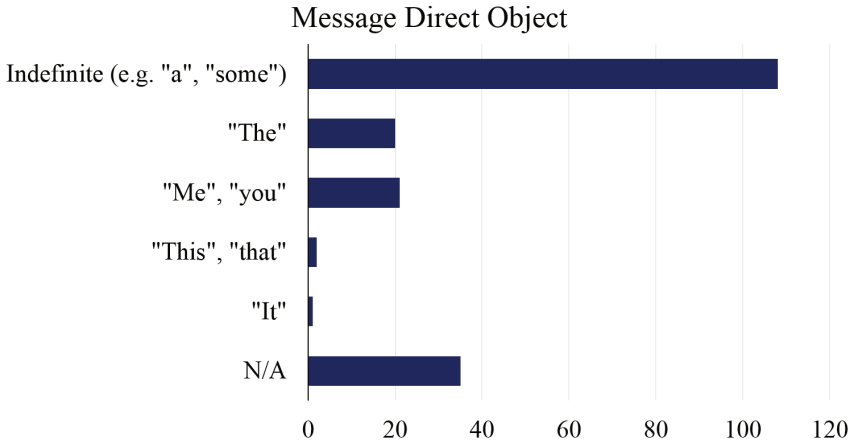

Figure 6:Distribution of messages by intended purpose, inferred from game context and player comments.

Most command imperatives were conceptually simple, requesting actions that had only one step (as in <come to me>) or two steps (as in <bring me oak wood>, requiring help_bot to collect oak and bring it to the player). Players also tested more conceptually complex requests, such as <build a house>. In response to these, help_bot would prompt the player to <show me how>. At this point, players typically simplified or abandoned the request, although some proceeded to demonstrate or explain the task (see *Responses to prompts for additional information*).

Stop imperatives, such as <stop> and <don't mine that>, were typically used when help_bot had completed a task to the player's satisfaction, or when it had made a categorical error. By this, we mean an action that was different in kind from what the player intended, such as when this player tried to ask help_bot to collect fruit:

Player:<get food>

Help_bot:<ok>

Player: "Oh, it's about to go and get food! Yay! I really hoped that would work."

Help_bot moves towards a cluster of sheep and cows.

Player:"Don't kill everything please. I'm going to follow it and make sure it doesn't kill everything. Oh – I'm not going to watch, because I feel like it's going to kill everything. . . Maybe I should tell it don't kill everything."

Player: <don't kill everything>

Help_bot:<?>

Player: "You don't. . ." *[nervous laugh]* "OK then, I'm just not going to watch and pretend that help_bot isn't slaughtering animals behind me."

Player: <stop>

Players did not use stop commands when help_bot made smaller-scale mistakes, such as placing blocks in the wrong location or digging a hole too deeply. In these cases, players often verbalised their frustration, but in the game they simply reversed help_bot's actions using their own avatar. In the post-task interview, players said they wanted help_bot to interpret either a <stop> command or a reversal of its recent actions by the player as implicit negative feedback, so that it would be less likely to take those actions in the future. That is, to update its behavioural algorithm. However, there were concerns that textual feedback may be too ambiguous, so help_bot might unlearn the wrong behaviour.

Interrogative or questioning phrasing was the second-most common message structure. Only two-fifths of these messages were punctuated with a question mark, as would be grammatically expected. We inferred that less than half of the interrogatives were truly intended as questions (e.g. "do you have any wood?"), and the remainder were indirect commands (e.g. "can you get me some coal please"). Interestingly, the use of a question mark was a strong indicator of a genuine question: three-quarters of the queries, but only one-fifth of the interrogative commands ended with a question mark, as figure 7 shows. One participant surmised that a question mark might be required for a message to be understood as a question:

Player:<do you have any wood?>

Help_bot:<yes>

Player: <how much>

Player: "I probably should have done a question mark."

Help_bot:<?>

Player: <how much wood do you have?>

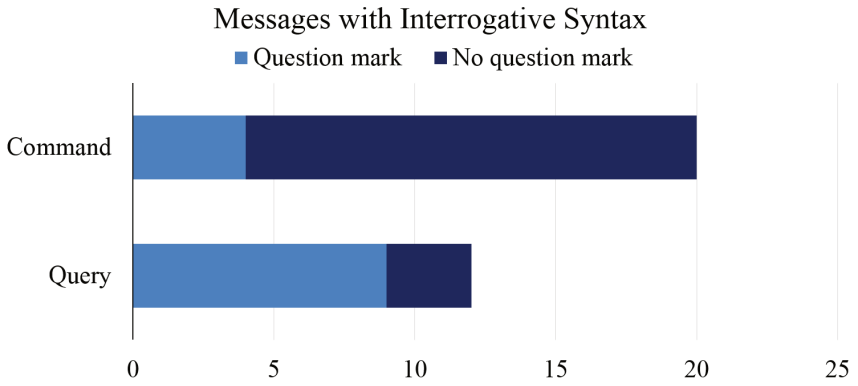

Figure 7:Breakdown of messages with interrogative syntax. Most of those intended as queries ended with a question mark, whereas most of those intended as commands did not.

Interrogative queries were used to learn about help_bot itself. Questions referred to either the contents of its inventory (<do you have any wood?>), the types of actions it was capable of (<what can you do?>), and its status (<are you lost?>). Players used these questions to gain information about help_bot that was not available through other means.

The third-most common message type was *declarative*, or straightforward statements of fact. The primary uses of declarative messages were to identify an object (<this is a shelter>) or to acknowledge help_bot's actions (<thank you> or <well done>). In a few cases, declarative statements were paired with learning commands to teach help_bot a behaviour that it could later use. For example, one participant instructed help_bot to <watch> as they built a simple hut shape, typed <this is a shelter>, then typed <build a shelter>. Other participants described more elaborate versions of this teaching approach as a way of automating repetitive work:

"One of my friends, every world he makes he always has this thing where he has [. . .] a boat with a pig in it and it always just spins around eternally. He could name it 'pigspin' or something like that,

and every world he goes in he could give [help_bot] the things it needs and go ‘build pigspin’.”

Two players used declarative messages as indirect stop commands for help_bot (<you don’t need to make any more planks> and <that’s fine>).

In the post-task interviews, players mentioned that they thanked or complimented help_bot as a form of positive feedback, with an idea that this might reinforce its learning of the recent behaviour:

“It’s about being polite, and also saying ‘thanks, you did the *right thing*’.”

Four messages were *exclamatory* in format, of which three were greetings (<hello> and <hi>) and one was a celebratory statement (<yay we finished the maze!>). We classified the purpose of all four as acknowledgements to help_bot, with the latter also being an explanatory message intended to reinforce the idea that what the player and help_bot had just built was a <maze>.

Finally, five messages were incomplete fragments. Two of these were self-corrections by the player (<bring me the wod> followed by <wood>), intended to update the meaning of the preceding message. One was similarly an addition to a prior message, adding <two blocks high> after <build wall>. The remaining two messages were nonsensical (<jeff> and <s>), and at least one of these was deliberately so. The player explained in the post-task interview that they had entered a nonsensical message to test help_bot’s responses:

“I was trying to see – because I [previously] did ‘thank you’ and it said ‘ok’, so I wasn’t sure if that was a response to ‘thank you’ or if it was just its generic response if it doesn’t understand something. And I did some random stuff and [learned that] the generic response if it doesn’t understand something is [a] question mark.”

Indeterminacy of amounts, places and boundaries

Specificity was an issue for many participants. Players were forced to confront the fact that their everyday phrasing contains a great deal of ambiguity, which is resolved by human conversation partners through context and common sense. The Minecraft setting facilitated references to objects in the world, as it contains only a limited set of clearly labelled and categorised objects. However, players were uncertain how to specify locations and amounts in a way that help_bot would understand. Players also expressed uncertainty about help_bot's understanding of boundaries.

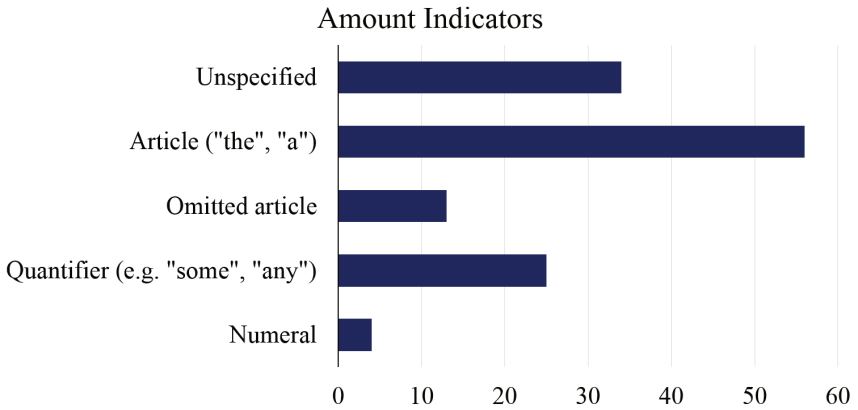

Figure 8:Breakdown of messages by how they indicated an amount for their direct object.

Amounts were rarely specified with a numeral; only one player did so (see figure 8). Most references to multiples of an object left the amount unmentioned, as in <collect bricks>. The rest of the time a linguistic quantifier was used, as in <get some wood> and <can you get me more inc sacks please>. Players would then leave help_bot to collect the objects until they felt it had enough, and stop or call it back at that point. Single objects were less difficult, as players included the relevant article ("a" or "the"), depending on whether the required object was generic (as in <build a box>) or specific (as in <bring me the coal ore>). In some cases, the article

was implied but omitted, as in <craft sign>, which could increase the difficulty for a natural language system to parse correctly.

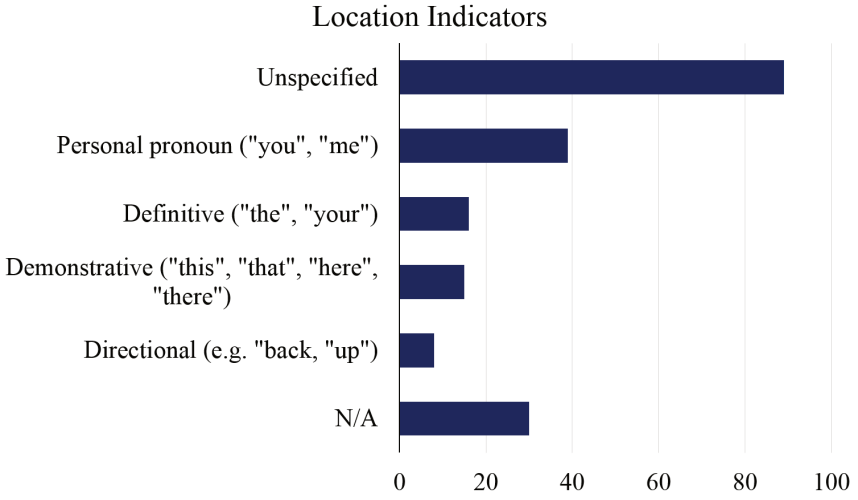

Figure 9:Breakdown of messages by how they indicated a location for the action of their message.

Locating the object of the message introduced further difficulties. In most cases, no location was specified, but there was an implicit deixis to many of these messages (see figure 9). For a typical fetch request, such as <get wood>, the player wanted help_bot to take the item from a specific location (usually the nearest source, unless that source was something the player had built) and bring it back to the player. Similarly, a typical build request such as <build a box> contained an unstated assumption that help_bot would place the building on a suitable flat piece of ground near to the player, but not close enough to interfere with their current activity.

“It built it quite close to where I built it. Like when I did the three-by-three square, it built right next to it. With this it didn’t really matter, but I think if you could tell it where to build that would be quite good. . . Maybe like coordinates or something, I don’t know.”

Some players attempted to be more specific about the location for their requests by using demonstrative terms such as “this” and

"here" as linguistic pointers. These were paired with the player's avatar moving to the relevant location, or even tapping on a specific spot with the avatar's hand, as in this exchange:

Player: <get me some spruce wood>

Help_bot: <ok>

Help_bot starts mining a house that the player had built out of spruce blocks.

Player: "So it is mining what I've done earlier, which is really weird."

Player: <don't mine that>

Help_bot stops mining: <ok>

Player looks at a tree: <mine this>

Help_bot starts mining the tree.

Player: "At least it knows what 'this' is."

The need to demonstrate the location with the player's avatar meant that proximal locations were much easier to point out than distal locations. Many players expressed frustration at their inability to designate specific places at a distance.

As mentioned previously, players expressed some concern about help_bot's judgement regarding the boundaries of locations and objects. There were times when a player might request more of a resource that they were currently working on, and worried that help_bot might mine that resource straight out of their built structure, as it was the closest source.

"Does it know when to stop? And if I had a house full of oak wood, and I said 'go get some oak wood', would it take the oak wood from my house?"

Responses to prompts for additional information

We defined three prompt messages for help_bot to use in response to messages that were outside the parameters we had set for its understanding. These indicated varying levels of comprehension, and elicited different types of responses from the players.

The first prompt was used when the player entered a request that was comprehensible to help_bot, but for which there was no clear or default location. This included requests for a resource type that was not currently visible, and requests for building a shape that did not specify where the building should go. In the pilot phase, the prompt text was <where?> or <from where?>, but players expressed confusion about how to answer this. One player asked if they needed to enter coordinates on Minecraft's grid reference, which was not a feasible solution. For the remainder of the study, we changed help_bot's prompt to <show me where>, and observed that players showed less uncertainty about this prompt, and consistently responded by physically moving their avatar to the desired location. We inferred from this that a query is easier for the player to respond to if it suggests a form of response, compared with one that is less prescriptive about how it should be answered.

The second prompt was <show me how>, used when the player entered a message that was recognisable in form as a building, collection or other action request, but which required knowledge that help_bot was not initially given. A typical case was a request to construct a complex object, since help_bot recognised only the names of geometric shapes unless taught other configurations by the player. Players most often responded to this prompt by giving up the request, but in several cases responded by demonstrating the behaviour they wanted and asking help_bot to copy it, as in this example:

Player: <build a tree>

Help_bot: <show me how>

Player: <no build a maze>

Help_bot: <show me how>

Player: <just watch>

Help_bot: <ok>

Player constructs a maze out of blocks.

Player: <now build a maze>

In these demonstrations for help_bot, players consistently marked either the start or the end of the action sequence with an explicit message, but not both. Help_bot was expected to recognise the completed structure as a Gestalt "object", and thereby understand where the relevant actions had begun or ended.

In contrast, a few players used more detailed messages to explain what they wanted, rather than demonstrating and expecting help_bot to replicate their actions:

Player:<help build a house>

Help_bot:<show me how>

Player:<put some cobble on top of each other>

Help_bot:<ok>

Help_bot begins stacking blocks of cobble. Player places more blocks alongside it to form a box shape, and help_bot follows this shape.

Help_bot:<done>

Player:<put some cobble on the top to make a roof>

Help_bot:<ok>

When messages were not recognisable as a command or a request, help_bot's fallback prompt was <?>. This was used in response to

spelling mistakes, sentence fragments and verbs that were outside help_bot's abilities (such as <die> and <write hello>). When players received this response, most were quick to assume that help_bot was unable to perform the action they had requested, and simplified or abandoned their request. However, in many cases they were mistaken: the action was within the abilities we had defined for help_bot, but the message formulation was not. Spelling was particularly notable, as players sometimes did not notice their own spelling mistakes, which left them with the false impression that help_bot could not understand the message they *intended* to write, rather than the message that they actually wrote. From this, we infer a need for feedback messages that are specific about the source of the lack of understanding. For example, rather than saying <?> or <I didn't understand that>, a message might say <I don't recognise the word 'whool'>.

Feedback on natural language input

Despite the challenges of natural language input, most players commented that they enjoyed it more than interaction via the traditional game controls or menus. A few players noted that menu-based interactions, such as those that exist for some friendly characters in Minecraft, would be preferable to natural language text as they provide more structure and clarity about the character's abilities. However, most considered the natural language input style an overall benefit as it opened up the possibility space for what they could potentially do with the character.

Players used the dialogue to consider how help_bot "thought", in some cases actively probing it with questions about its abilities or variations on a text prompt to test how it responded. The text responses provided a relatively clear channel to understand what was happening inside help_bot's "brain", and gave a sense that it was updating its behaviour.

> "With the one that I couldn't speak to, if I had tried to get wood or something, it didn't have the same feel that it was learning. So the text one, it felt like it was learning because it was saying ok, yes, I know how to do this."

Players also stated that natural language gave help_bot a greater sense of being alive and engaged with the player, compared with the non-speaking version, which made it more enjoyable to interact with:

> "Typing feels more interactive, like you're talking to a real person. Pressing stuff doesn't feel like that, like you're just talking to a computer."

Two players commented that they would like to have the option to talk to help_bot through speech rather than text messages, to further extend the feeling of a living character. However, they were uncertain about the ability of speech recognition technology to work well enough to support this.

> "It would be cool if you could do voice commands. But then again, you'd have to have the most to-your-country accent, otherwise it wouldn't understand it."

Expectations and cues for understanding the agent

The way in which players interacted with help_bot was influenced by their prior knowledge in several domains. Most obviously, players' experiences with Minecraft guided many of their initial attempts to understand and engage the character. Players compared help_bot to Minecraft's villager and wolf NPCs (non-player characters), for example in surmising that help_bot would attack any enemy NPC that the player attacked, because this was the behaviour for a tamed wolf. Players also drew on their experiences with other humans in the multiplayer game; two players tried to engage help_bot by repeatedly crouching their avatar in front of it, which is a social custom in online Minecraft equivalent to waving "hello". Finally, players compared the text inputs in our

study to the console commands in Minecraft. These commands allow players to edit the state of the game by entering a text string beginning with a forward slash – for example, </time set 6000> to change the in-world clock to midday. Several players initially started their messages to help_bot with a forward slash, until the facilitator pointed out that it was unnecessary. One player asked whether command strings in the same format could be used to manage help_bot's learning, such as </train help_bot X> to learn a current action and </set help_bot X> to repeat that action at a later time. These influences show that the context in which an AI character is deployed will influence the way users understand it and expect it to behave.

Expectations were also drawn from sources beyond Minecraft. Players who had programming experience compared the natural language inputs in our study to the programming language that they had used, and this guided their thinking about what might be possible. Real-world social cues were also applied: players expressed discomfort when help_bot followed their avatar too persistently, stood too close to it, or stared at it for too long. And unsurprisingly, several players referred to film depictions of robots and AI characters, such as *The Terminator*:

> "At one point I was like, 'ok ok ok ok, that's enough!' It kind of reminded me of in a film where there's like robots and they go out of control. That's why I was afraid to start digging the ground to get a flat bit, because I was afraid it would just start levelling the whole world."

Players' preconceptions about help_bot were, in some cases, well suited to the protocols we had designed for it, and in other cases beyond its abilities. What we found notable was that these expectations were sometimes assumed to be true, if only unconsciously, without having been tested. For example, one player travelled far away from help_bot and was confused when it was unable to find its way to them, as their experience with other NPCs had taught them to expect friendly characters in Minecraft to teleport near the player if they strayed too far away. This raises

the importance of providing the right contextual cues for players to form the right mental model of how an AI character works, as incorrect expectations may otherwise be set and not tested.

Variation in engagement and anthropomorphisation

We observed substantial variations between players in the ways that they engaged with, reacted to and spoke about help_bot. Putting these differences together, we hypothesise that they reflect two main dimensions on which attitudes towards help_bot varied. The first was level of engagement, or the extent to which players were interested in interacting with help_bot. The second was anthropomorphisation, or the extent to which players acted as though help_bot had human-like thoughts and feelings.

Differences in the level of engagement were apparent in the time each player spent interacting with help_bot during the tasks. As figure 1 shows, more than half of the players sent no more than seven messages to help_bot throughout the task, or less than one every two minutes, whereas several players sent more than twice this many messages. This variation carried over to other behaviours as well, including the amount of time the player spent watching help_bot, and the amount of interest they expressed verbally during and after the tasks. Highly engaged players spent more time experimenting with help_bot to determine its capabilities and asking the facilitator questions about it, and in some cases largely abandoned the construction task we had set in favour of playing with help_bot. We observed that several of the players who showed the greatest interest in help_bot also held higher expectations that it was capable of complex behaviour, although whether there was a causal relationship is unclear; it could simply be that these players thought and spoke more about the possibilities.

There are several behaviours wrapped up in what we are calling “anthropomorphisation”, each of which represents an attitude that the AI character has human qualities. Players varied in the

language they used in text messages, from those who entered only terse verb-noun commands such as <kill sheep> to those who greeted help_bot with a <hello>, framed their commands as polite requests such as <can you bring me some birch wood please>, and thanked help_bot for completing tasks. Players showed varying levels of empathy for help_bot, from those who casually hit it with an axe when it was in the way, to those who expressed concern about its wellbeing. One such player avoided clicking on help_bot, concerned that they would hit it by accident, and expressed guilt at making their avatar eat food in front of help_bot:

> "I feel kind of bad eating it – can I give this to you?"
>
> *Player gives some of the food to help_bot and demonstrates eating it with their avatar.*
>
> "Did they eat it? I don't see it, I assume they ate it. Now I feel slightly less bad."

When talking about instructing help_bot, some players described it in terms of a brainless instrument that could be programmed to perform repetitive actions, whereas others gave it tasks that required more independent, sophisticated and arguably human-like judgement. As an example of the latter, one player repeatedly set up pits for help_bot to fall into, explaining that they were trying to teach it to avoid the situation by looking out for and filling in any pits that it encountered in the future. Players also expressed an expectation that help_bot would prioritise tasks in a common-sense fashion, so that when a hostile creature attacked, for example, they were surprised if help_bot did not automatically come to their assistance. As such cases happened only rarely during the test, it was not certain whether this expectation was higher among participants who had higher expectations for other aspects of help_bot's judgement.

The behaviours that indicated low or high anthropomorphisation appeared to cluster together in individual participants. A player who expressed empathy for help_bot was also frequently one who

gave it higher-level instructions with more room for autonomy, and one who described it more as a character with a mind than as a plain instrument. That is not to say that players who showed higher anthropomorphisation believed help_bot had human intelligence or emotions, but they appeared more inclined to act as though it did.

	Low anthropomorphism	**High anthropomorphism**
High engagement	Treated agent as an instrument to be programmed	Treated agent as a character capable of judgement
Low engagement	Inattentive to agent	Polite to but uninterested in agent

Table 1: 2×2 model of player attitudes to the AI agent (help_bot), showing how variations in engagement and anthropomorphism resulted in different behaviours.

Notably, the level of engagement and the level of anthropomorphisation were at least partially independent of each other. Some players showed relatively little interest in help_bot, but addressed it courteously in the few messages they did send. Other players spent considerable time testing out help_bot's abilities and talked about it with enthusiasm, but as an interesting tool that they could program rather than as a character. There were players who liked help_bot as a potential sidekick character that could exercise independent judgement, and those who largely ignored it and said little to suggest that it had an inner life. The variations are summarised in table 1. This study is too small-scale and unstructured to draw firm conclusions about these variables, but we put them forward as a possibility to investigate in later research.

DISCUSSION

Our analysis shows that players' messages to help_bot primarily used simple syntax and direct commands, but that there was substantial complexity and variation in the details of wording and the way in which text messages were paired with in-game actions. Few messages were repeated between different players, and players invested considerable thought into their choice of words due to the difficulty of communicating with an AI that does not have the common ground of knowledge and judgement shared by most humans. Indirect speech acts (Searle 1975) were common, particularly in the form of commands with interrogative phrasing, which highlights the need for a natural language interface to either distinguish between direct and indirect commands, or remind players to use direct syntax. A contextual autocompletion function would seem suitable, to provide guidance to players as they are formulating the phrasing to translate their intention into words, which was often a moment of hesitation.

The findings also show that messages rarely contained all the information needed to interpret them correctly within the words themselves. Contextual information was also required. Much of this missing information could be inferred quite simply in the scenario we studied, but would become ambiguous in other contexts. For example, it could be assumed in our study scenario that help_bot was the subject of imperative messages as there was no other conversation partner in the game, but in a multiplayer or multi-agent game situation the subject would need to be stated by the player or inferred by the agent. Other messages required reference to the dynamic game state to be accurately interpreted, as in the use of deictic words such as "there", "that" or "away" matched with the player's avatar's location and gaze direction. (This is suggestive of one of the earliest multimodal interface models, *Put-That-There*, which combines speech, gesture and gaze to determine the user's input (Bolt 1980).) Players were aware of the inherent indeterminacy of their language, and expressed concerns about help_bot's ability to make judgements that would

seem sensible for a human, such as distinguishing between the "natural" and built environment (that is, between what the game generated and what the player constructed). Thus, the challenge for natural language agents in games is not only to make correct judgements about the player's intentions, but also to communicate the results of those judgements to the player.

The need to communicate the agent's internal decision-making is even greater in the context of interactive machine learning tasks, wherein the player is directly teaching the agent to learn new behaviour or change its existing behaviour. Help_bot's messages reassured players that it was learning, and went some way towards clarifying what it was learning and what it was not, despite consisting of only a few words. This appears to be linked to the sentiment that help_bot felt more like a living, thinking person when it talked: these signals conveyed the sense that it had a mind, rather than just a behavioural algorithm. Accordingly, players' strategies for teaching help_bot focused on communicating concepts through demonstration and example, rather than training help_bot through frequent feedback on its actions. (Note that players were told before each task that help_bot could learn from their feedback.) This is consistent with previous studies (Amershi et al. 2014; Kaochar et al. 2011), and poses a technical difficulty as many interactive machine learning approaches rely on user feedback to iteratively adapt the agent's behaviour (for example, Knox 2013). Some players did perceive themselves to be giving help_bot feedback, although this came in the form of implicit signals, such as acknowledging messages like <thank you> and contradictory actions like undoing help_bot's work.

Users may be encouraged to take a more direct teaching role by giving them tools to make their feedback more precise, and by providing clear feedback on what has been learned. Participants in our study were hesitant to engage in teaching, partly due to a perceived ambiguity about precisely what help_bot was learning from their actions. In addition, the fact that our help_bot was designed to continuously observe and adapt its behaviour to the

player's actions made it hard for our participants to recognise behaviour that was permanently learned, as opposed to momentary imitation. Participants generally preferred to be able to control when and where help_bot was taking in information for its own learning.A suggestion to reduce the ambiguity around help_bot's learning was to give players the ability to toggle it between a learning mode and a non-learning mode.

The way in which a subset of players anthropomorphised help_bot is consistent with past studies of conversational interaction (Luger and Sellen 2016) and empathic agents (Paiva et al. 2017), and representative of a wider effect in human-computer interaction: the tendency for people to respond to computers as though they are human, which Reeves and Nass have dubbed the "Media Equation" (1996). Nass and Moon argue that users "mindlessly" (2000, 82) apply social rules and expectations to computers, and Nass and Brave (2005) suggest that this effect is particularly strong for interactions involving speech. The strength of this effect has been challenged (Shechtman & Horowitz 2003; Lang et al. 2013), but there is some evidence that users apply more social behaviour to computer characters as their appearance becomes more human-like (Gong 2008). This implies that natural language interaction is a modality that will elicit more social reactions, as players in our study ascribed a greater sense of humanity and intelligence to help_bot when it used text, despite the text being limited to only a few formulaic phrases.

These variations in players' attitudes and expectations towards help_bot are important because they show that players have different mental models (Norman 1983) of how the agent works and what it is capable of. Our findings suggest that there is no universal starting point or blank slate in how players will perceive an agent. Expectations about an agent's degree and form of "intelligence", its adaptability and its responsiveness to different inputs are influenced by both the presentation and context of the agent, and background knowledge drawn from science fiction, previous game experiences, and real-world human social customs.

To facilitate players having a smooth experience with an agent like help_bot, designers will need to evaluate the context of the game genre and the appearance of the character to anticipate what kinds of expectations players may have, and consider how both implicit cues and explicit messages may serve to guide players to adopt the right mental model for working with their character.

Limitations and future directions

Our concern in this study was not only to evaluate what players said to the agent, but to observe players' actions in the context of gameplay, and to examine their reasoning in the post-task interviews. By nature, this was a limited study of a relatively small group of participants of one age bracket in one geographical location in a single language. A broader-based study would be needed to determine how representative our measurements are of natural language interactions with game characters by other groups of users, or to make statistical comparisons of message patterns under different conditions. One intriguing question, which we plan to address in a future study, is whether players use language differently when (knowingly) communicating with an AI compared to another human player, and in what respects their language is different or similar.

Our study has not been designed to elicit comparative preferences between natural language messages and conventional game dialogue systems such as branching conversation trees. As we have reported, our participants did compare the natural language system to other methods of interacting with game characters, but unsurprisingly these comparisons centred on Minecraft's own system, which is mostly wordless and oriented towards trading goods. In the most directly relevant comparative study, Sali et al. (2010) found that players preferred typing natural language messages to game characters over choosing messages from a menu, even though they encountered a higher number of errors, and frustration with the natural language mode. This is consistent with our findings. However, both studies looked at only a single

play session, and involved participants for whom natural language was a novel way of interacting with game characters. It remains to be seen whether a preference for natural language would continue over a longer time period.

CONCLUSION

Overall, our study shows that there are substantial commonalities in the syntax and concepts that players use in natural language interactions with a game character with learning AI, but also significant variations in the specific wording, behaviour and expectations for the character, which are driven by players' prior knowledge and contextual cues. While natural language interaction offers the promise of a flexible, engaging and intuitive way to interact with and teach AI agents in games, much work will be required to realise this prospect. Our study did not specifically set out to measure the extent of anthropomorphism in players' mental models of the character, but we have identified this as an area for further investigation to determine how it can be used either as a design resource to shape the interaction, or as a pitfall to be avoided. In future work we will look more systematically at the effects of anthropomorphism on language-based interaction with an AI character.

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2.

'If you are feeling bold, ask for $3'

Value Crafting and Indie Game Developers

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ABSTRACT

This paper explores the practices that indie developers deploy to manage the risks they encounter while making, marketing and selling games. Building on concepts such as indie labour (Browne 2015) and theory-crafting (Paul 2011), this paper explicates the concept of *value crafting* as a better way to understand indie game developer practices. Indie developers engage in value crafting as a way to construct the value of their game and to sell it to a wide

audience. This is reflected in debates about the pricing of indie games – there is no agreed-upon standard for contemporary indie games, with price points now ranging from free (with or without in-app purchases) through $30 for individual games. Alongside the uncertainty of how to price a game, developers formulate elaborate marketing plans for various stages of their work, which can include running a Kickstarter campaign, promoting their game via social media, creating, moderating and participating in fan forums, debating whether or not to release their game as an Early Access title on Steam, releasing demos, pitching their game to game journalists and local media, finding YouTube and Twitch personalities to play and promote their game, and many other activities. Indies, who do all of these things, also engage in lengthy discussions with one another to share information, usually incorporating detailed charts, graphs and statistical analyses. These post-mortems of their activities attempt to explain a game's success or failure, as well as to rhetorically construct a particular activity *as* successful in some way even if sales figures are low – so it might lay the groundwork for future games, build a fan base, teach valuable lessons learned, and so on.

Keywords

Game development, indies, game industry, game pricing, game value, Steam

INTRODUCTION

For independent game developers, particularly small teams and studios, making and selling videogames involves a set of skills quite different from coding, art and sound creation, as well as overall game design. Increasingly, such developers (or 'indies') must be versed in marketing, team management, analytics, community building and management, and general business acumen. Teams are now responsible for not just making a new and innovative game, but pricing it, determining its release date,

whether to allow early access (alpha and beta testing) to potential players, how to manage their game's community, how to negotiate with publishers, how to garner media attention, and how to get their game funded in the first place. And just as their jobs have multiplied, the options for these various responsibilities have multiplied as well. This paper is a preliminary investigation of how a subset of indie developers talk about these responsibilities, and how they negotiate the risks involved. In doing so, this paper adds to our understanding of the videogame industry (particularly indie studios), as well as how the business of games is evolving in complicated ways.

A (SELECTIVE) HISTORY OF THE BUSINESS OF GAMES

There were no business models or marketing plans for the earliest videogames – they were free to play – if you were lucky enough to have access to computers like the PDP-1 at elite North American universities. As games developed, a business model emerged – games for PCs might be sold via diskette in plastic baggies at a local Radio Shack store in the US (or similar electronics store), or you could seek out arcades or just singular game cabinets that accepted quarters (or tokens) to enable a limited play period – usually until the player lost a certain number of game 'lives'. Only recently have game scholars begun paying much attention to the history of arcades: Carly Kocurek's recent book on arcades in America in the 1980s is a notable exception, detailing for example how the value of a quarter declined almost 50% from 1972 to 1983, and what that meant in material terms for arcade game players (Kocurek 2015). Yet Kocurek's focus is on arcade operators and patrons, and not the developers who made the games or profited (or not) from them. In most narratives of early game history there is no discussion of differential pricing, or how to value the labor of developers in relation to the products they created.

Even as the games industry became more popular and academics took notice of the rise of home console systems in the 1990s, the business of games was not a major focus of early scholars. Yet, a limited discussion of the economics of games started to emerge at that time. In 1991, Marsha Kinder's *Playing With Power* offered a detailed study of the rise of the games industry and how it was being integrated into a transmedia industry focused on children's entertainment (Kinder 1991). As a lead in, she discusses Nintendo's financial strategies – explaining their adoption of the "razor marketing theory" that had already been introduced "into the toy industry in 1959 by Mattel with the Barbie doll – a strategy of focusing on the development and sale of software (whether a game cartridge, a Barbie outfit, or a razor blade) that is compatible only with the company's unique hardware," where the cost of the hardware is kept low to promote more software sales to repeat customers (91).

Later scholars such as Aphra Kerr have more fully explored the business models of videogames over the next decade and a half, which were limited by the predominance of particular distribution channels such as proprietary console systems, as well as finite shelf space in brick and mortar storefronts (Kerr 2006). More recently the rise of 'studio studies' in game studies has called attention to the developers who make games, who have often worked under shrouds of secrecy due to industry practices that value nondisclosure agreements to maintain competitive advantage, as well as control over creative content (O'Donnell 2014). An upshot of that work is Casey O'Donnell's flagging of the difficulty game studies researchers have had in gaining access to traditional developers, who either are not allowed, or are reluctant to speak with anyone outside their studios about the work they do there (2014).

Yet, with the rise of new platforms for distribution such as Steam, and the reduction in price of development tools (such as Unity and Unreal Engine becoming freely distributed), we have witnessed an explosion of 'indie' developers, who in addition to creating

games outside the closed system of consoles, have also been much more forthcoming among themselves and with 'outsiders' about the business of games and their own efforts to make and sell titles (Whitson 2012).

The practices that indie developers engage in – game making, marketing and selling – are constantly being negotiated and renegotiated, as platforms, player demographics, tools, business practices and regulations all constantly shift and evolve. One key constant in that flux, however, is managing risk. Others have begun to explore that activity, including Pierson Browne's study of Montreal games incubator, Execution Labs, and the game studios it has supported (Browne 2015). From that work Browne developed the concept of "indie labor," which comprises a set of strategies for managing the risks faced by small development studios as they create and release games over and above activities such as art asset creation, level design, game programming, and so on. Indie labor, Browne argues, is affective as well as economic; those who engage in indie labor envision it as "an investment in both their studio, as well as the broader imagined community" that surrounds them. Browne further contends that indie laborers "manage risk through talk" and see their efforts as "an investment in both their studio, as well as the broader imagined community" of indie game development.

Part of the work of indie labor, we argue in this paper, is what we term value-crafting. Value-crafting encompasses certain aspects of indie labor, particularly those related to determining how best to value their creative products, build out a space and successfully market them to players. It includes determining what business model to use for a particular game, how to price that game, how to raise funds for game development, how, when and where to release the game, and other factors. Chiefly, it includes anything that relates to the *valuation* of the game, which may or may not be a traditional element of game production. It is an increasingly visible element of the contemporary games industry, which has multiple platforms, pricing structures, customer groups, and many

other variables. It also builds from work in player studies that examines the activities of high-level players who seek to determine 'best practices' for playing particular games. For that we draw on Chris Paul's explication of "theory-crafting" and how it is based on players' systematic experimentation with gameplay, along with a reliance on data and metrics to achieve optimal play (Paul 2011). Theory crafting attempts to determine the optimal method for advancement or success in a game such as *World of Warcraft* or *League of Legends* (Wenz 2013). And, as Paul explains, theory crafters often influence how others play, pushing for their strategies to become the normative strategies. Key to this is a reliance on technicity and appeals to science, hypotheses and the seeming 'objectivity' of statistics and numbers (Paul 2011).

Value crafting takes a similar approach: trying to sift the meaning from the noise of contemporary game development and distill best practices for financial success. Yet value crafting, like theory-crafting before it, is not an exact science, and multiple approaches – or theories – are still in play. Increasingly though, value-crafting is built on seemingly systematic experimentation with game development and marketing, along with a reliance on data and metrics to achieve optimal sales. Yet, while games are perceived as meritocracies, and in-game losses due to a failure to follow such rigid formulas are not life changing, for indie developers the stakes are much higher. In one, a game may be lost, but in the other, the loss may be of an entire studio. Therefore it makes sense that the pull of numbers and analytics, especially in an industry that is more and more data driven, is increasingly marshaled in contrast to anecdotal or experiential accounts. To get a better sense of this activity, we engaged in a detailed case study of the discourse around the indie game business found on the subreddit r/gamedev as well as developer blogs found on the Gamasutra site from 2013 through early 2016. Using that data, we explore and advance the concept of value-crafting, and how it relates to the precarious nature of the contemporary indie game marketplace. The article focuses on only two elements of value-crafting due to space constraints – overall pricing dilemmas and strategies, and

how Steam functions as a system to navigate – but more will be studied in future work.

GAME x VALUE = PRICE?

Perhaps the toughest issue that indie developers face is setting a price for their game. Unlike AAA studios or publishers, there is no default "$60" price tag to employ, which potential consumers have come to expect, even if they don't welcome it. Instead there is constant disagreement among smaller game developers over how much to charge, or whether to charge at all for a game upfront, instead opting for freemium business models that employ advertising, in-app purchases (IAPs), or to simply give the game away as a way to promote the studio and build a reputation and community for future game releases.

Indies debate these approaches using a range of strategies, from data-driven post-mortems and platform analyses to more informal gut-level reactions toward what a potential game 'seems' to be worth. Most would agree that the absolute upper limit for indie games is $30, with precious few mentioning that price as acceptable for their own titles, at least in the data examined for this project. Far more common are debates over whether something 'looks like' a $5 or a $10 game, or whether it should simply be free-to-play with an alternate revenue model. Part of this also depends on platform – mobile is seen as oversaturated, with the iOS market in particular creating a playing field where consumer expectations are toward free or – at most – 99 cent games.

For example, one developer posted to r/gamedev in 2014, asking the community to help him determine his game's worth – by which he meant price.[1] The poster explained that he and his friend had just created a mobile game and released it in the Android store, but "we have absolutely no idea about marketing or pricing." He

1. https://www.reddit.com/r/gamedev/comments/1zqakx/how_to_find_out_what_our_game_is_worth/

asked for pricing help from the group, explaining that he and his partner didn't like in-app purchases. Some commenters tried to persuade him to try using in-app purchases, asking why it did not appeal to him, or if he had thought about using them in creative ways. Seth, from Butterscotch Shenanigans (in the most popular response), was quick to assert he "would advise strongly against going pay-up-front. … We had our first game launch as pay-up-front and experienced over 97% piracy and about 2,500 sales, even with a huge marketing push. So we went freemium for our second game and are now pushing 2 million users."[2] Other commenters felt Android was the problem, and instead the game should be moved to iOS as there is "much more cash to be made there."[3] That commenter offered no data to back up the assertion (and was not challenged), despite evidence that "the average game on iOS makes … no money at all" (Galyonkin 2015a).

Some commenters did try to engage on the pricing question, however. One person agreed with Tim's dislike for IAPs, and suggested, "For a full-priced game, ask for $1, the minimum possible price. If you are feeling bold, ask for $3 … Really bold? $5"[4] And one commenter pushed for an entirely different strategy, particularly for a new developer, "If I had to start all over again now, I'd create the most awesome game that I can possibly create, give it away for free on as many platforms/systems as I possibly can, and shout about it to make sure everybody notices me and starts following me on social media. Then the next game you can start asking for money and hope those newly-found fans stay around for your games."[5] Even this small sample demonstrates the diversity of opinions found among this group and the way

2. https://www.reddit.com/r/gamedev/comments/1zqakx/how_to_find_out_what_our_game_is_worth/cfw4tf7
3. https://www.reddit.com/r/gamedev/comments/1zqakx/how_to_find_out_what_our_game_is_worth/cfw5l19
4. https://www.reddit.com/r/gamedev/comments/1zqakx/how_to_find_out_what_our_game_is_worth/cfw211t
5. https://www.reddit.com/r/gamedev/comments/1zqakx/how_to_find_out_what_our_game_is_worth/cfwlw7i

they made their cases. While some relied on personal experience and used data to make their case, others fell back on questionable evidence or assertions, as well as simply personal opinions or conjecture.

In a similar thread a year later, ethanxxx posted that he was releasing his game, INK, via Steam and had trouble deciding the price. His team felt the game should be priced between $5 and $10, but feared a lower price would lead people to "assume it's bad simply because it's [priced] too low."[6]

Opinions again varied widely on what he should do, with some commenters strident in their assertions about the game's potential price point. The top-rated comment, from Blazzguy, tried to have it both ways: "Put it at $10. Have an 80% off sale. Boom."[7] But there was no consensus on what price was best for INK, at least as a starting price, with a variety of contradictory advice following that. Cantgetno197 said simply, "That looks like a $5 game to me,"[8] while ali_nagori offered a strategic justification for a lower price based on how Valve groups games: "[price it at] 4.99$ your game will have more chance to be visible in the under 5$ sections."[9] Jimeowan wrote in contrast, "$7 sounds like an attractive price and still values the game fairly," but offered no valid reason why this would indeed be 'fair.'[10] Going higher still, Keyshadow believed the price should be $10, but that would still depend "on how much gameplay there is. If it only lasts for 30 min[ute]s/[one]

6. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/
7. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/ct0n084
8. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/ct0mwc1
9. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/ct0sxz2
10. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/ct0oc6y

hour then you may want to reconsider."[11] Here, the question of value is equated with the size/length of the game – more gameplay and content results in a better-justified higher price. Komollo felt that starting at $15 would be even better as "one study found that people enjoy games that they have paid more money for. … Don't underprice your game. It will make people undervalue it. … you can lower the price later through sales, and people will get happier, but you cannot increase the price without making people upset."[12] Such a statement offers a different justification for value beyond length – here the price *itself* will set the value of the game, rather than having the game's value determine its price.

Back to the size or scope of the game, GagaPete felt that if the game had more than three hours of gameplay, pricing starting "around 12 – 15 USD,"[13] while JohnnyElBravo simply wrote "ASK STEAM to price your game," implying that they were the professionals and would perhaps know best what this type of game would sell for.[14] Eschewing the dilemma of choosing a particular price, Frenchie14 pointed out that "$5 vs $10 doesn't make any difference to me. The hard part is getting people to decide they want to buy the game in the first place. People who want the game to be cheaper will wait for it to be on sale, not for it to hit a certain price."[15]

These kinds of discussions appeared in multiple threads on r/gamedev during the time period examined, as developers tried to determine the relationship between a game's *price* and a game's *value*, or even if such a relationship still existed. Many voice

11. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/ct0rjmu
12. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/ct1eunh
13. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/ct0wz76
14. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/ct2up1m
15. https://www.reddit.com/r/gamedev/comments/3d0bp1/ink_pricing_our_game_on_steam/ct1252b

their frustration at a saturated market, where buyers have been "conditioned" to expect both low prices and to wait for sales where those prices will be reduced even further. One baseline that does emerge is that a game's starting price is only ever that – what its initial listing will be, much like the sticker price of a new car in a dealer's showroom. A game's price can and will decline over time, as the game ages and enters the "long tail" of declining sales and interest, and as it is eclipsed by "newer models."

Most such discussions and post-mortems revolve around games with prices that range from free through to $5 or $10 at most. Yet, one discussion of a game bucked that trend, serving as the example that proves the rule. In July 2015 a post appeared from the developer of the "ASCII roguelike game", *Cogmind*, which discussed the game's development process, as well as the developer's design decisions, marketing efforts, and their controversial decision to price the alpha version of the game at $30 USD.[16] What's interesting here is not simply the unusualness of such a price for an indie game, but the lengths the writer goes to in order to justify that decision. Kyzrati writes, for instance, that the "backlash was *far* less severe than I expected."[17] He goes on to point out that the roguelike community, which expects lots of high-quality, free games, still accepted this decision, in part due to the quality and new features of the title, but also because the company wanted to focus on a particular kind of *buyer* or player: "I want quality players who are familiar with where Cogmind is coming from." Kyzrati points further to the price as a way to sift out "those who buy discounted games on a whim and may or may not ever even play them." Here, one developer discounts much of the conventional wisdom about selling/pricing a game – particularly that potential buyers primarily look at a game's price. Instead, he argues that he does not want *those kinds* of potential buyers – instead, as with the prior commenter who believed a high price would produce purchaser investment, Kyzrati wants quality

16. https://www.reddit.com/r/gamedev/comments/3cdmu9/releasing_a_commercial_ascii_roguelike_a/
17. Ibid.

players who want to play the game, not simply add it to their game library.

In closing, Kyzrati makes the case to the larger community that game pricing should be directed toward the particular audience or player base a game is trying to reach, such that "games must be priced for their market, not some general 'okay indie games average about $10 right now so this should be $10 too.'"[18]

While many such discussions exist and could be further analyzed, they span a diverse array of platforms, each with its own issues and contest. One that receives perhaps a disproportionate share of attention, however, is Steam, which will be focused on next.

LETTING OFF STEAM

Valve's Steam platform, which launched in 2002 and now claims more than 100 million active users, is a perpetual point of discussion for indie developers in many different and complex ways (Makuch 2014). Initially created as a storefront for Valve's own PC games and a way to easily update them, the platform has evolved into the dominant site for digital game purchases on the web. Over that same time period, Steam has opened to major and minor publishers and developers, including independents. In exchange for the ability to publish via Steam, Tanya Short reports that Valve takes 30% of all game sales.[19] Valve plays a continuing role in managing developer activities while their game is listed: "they have to approve any requests for sales/discounts, the first version of your store page, and/or any new products (like DLC, soundtrack, deluxe versions, etc.). Oh yeah, also they have to approve your requests of Steam keys of your game, which are yours to do with as you wish. You usually get a few (like 5)

18. Ibid.
19. https://www.reddit.com/r/gamedev/comments/3p983p/has_anyone_here_published_on_steam/cw4aba6

opportunities to put your game onto the front page (though not as the top giant image), and it's up to you when you do that."[20]

Even a few years ago, it was easy to see why indies would be excited about getting their game hosted on Steam; in 2013 only 561 titles were released via Steam, with expectations that a new game might remain on the store's front page for days, rather than hours (Lahti 2015). Industry insiders often refer back to that potentially-fabled past as the "holy 2013 way (put your game on Steam, receive money, brag on Twitter)" (Galyonkin 2015b). Things have changed remarkably since then: 1900 games were released on Steam in 2014, and more than 3000 titles appeared in 2015, suggesting an average of about eight games released every day (Galyonkin 2016). This means Steam has become a key site for risk management by indies who want to be successful, and a critical node for value-crafting when it comes to not just pricing, but also determining release dates, sales discounts, and other factors. As one developer pointed out when he compared sales data for two of his studio's games released in 2012 and then 2016, the shift to Steam as the predominant site for sales was undeniable and "it seems that your game doesn't exist unless it's on Steam" (Grochowiak 2016). In his estimation "this means we're no longer independent developers, we're Steam developers." Other developers make similar points, usually supported with pie graphs demonstrating the overwhelming dominance of Steam as a point of sale.[21] For example, Lost Decade Games' developer Matt Hackett wrote that his studio's game *A Wizard's Lizard* sold nearly 15,000 units, with 86% of these coming from Steam, which he neatly illustrated with the following graphic (Hackett 2014).

20. Ibid.

21. What makes this predominance somewhat dismaying is Steam Spy's assertions that the audience using Steam is predominantly male (95%) and tend to come from the US and Europe (Galyonkin 2016). If developers are tailoring games and marketing efforts to appeal to Steam users, large parts of the market are being ignored.

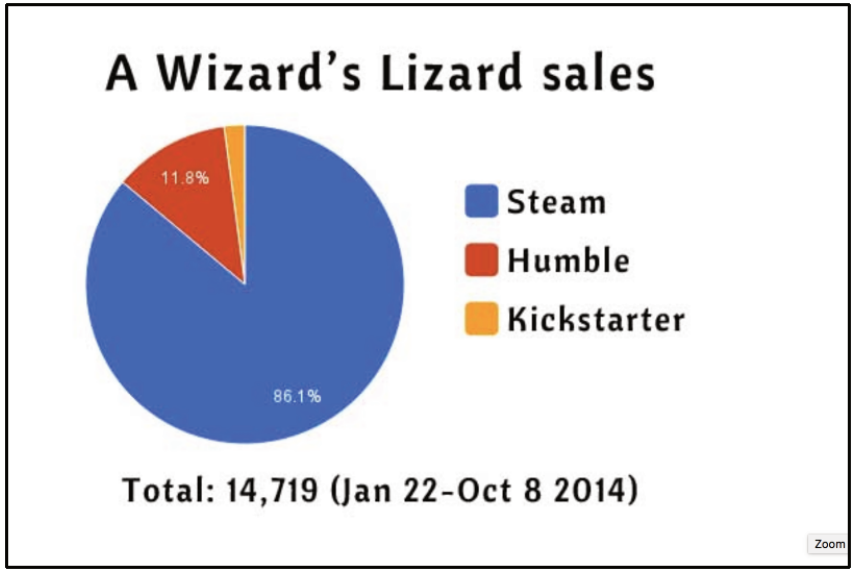


Figure 1: "A Wizard's Lizard by the numbers."

Visuals often convey more starkly what words perhaps only suggest – Steam cannot be ignored by developers if they want to sell more than a handful of copies of their game. Consequently, they must continually refine their techniques for using Steam and its ever-shifting processes. Summing up this dependence for many indies, game developer Doucet titled his blog post, "I Wish Upon a Steam" and began with, "I write about Steam a lot, because they hold my fate in their hands like a tiny bird" (Doucet 2014).

Getting accepted & the Greenlight system

The process for getting a game accepted by Steam has always been something of a black box for developers, ranging from a submission process with acceptance based on unknown factors through the (now defunct) "Greenlight" system for new developers (proven developers can skip this step), which required potential

players (the voting public) to vote “up” or “down” for new releases to be accepted onto Steam.[22]

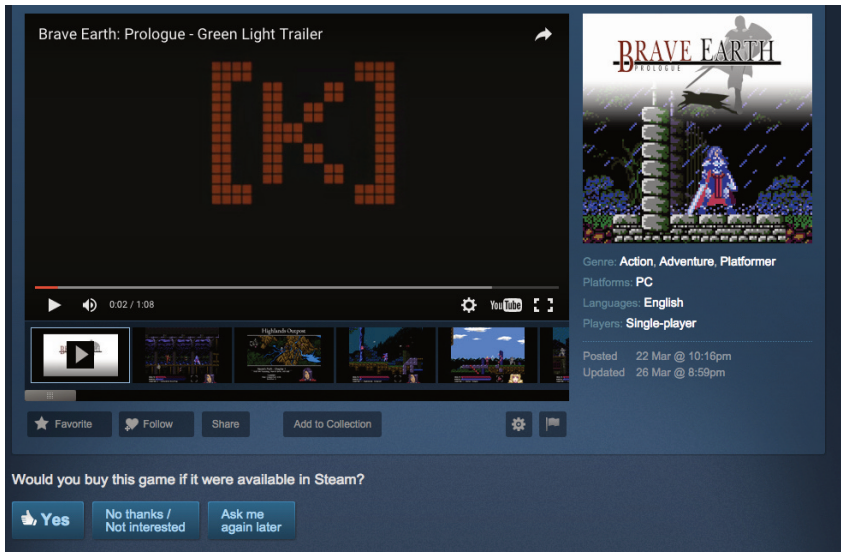
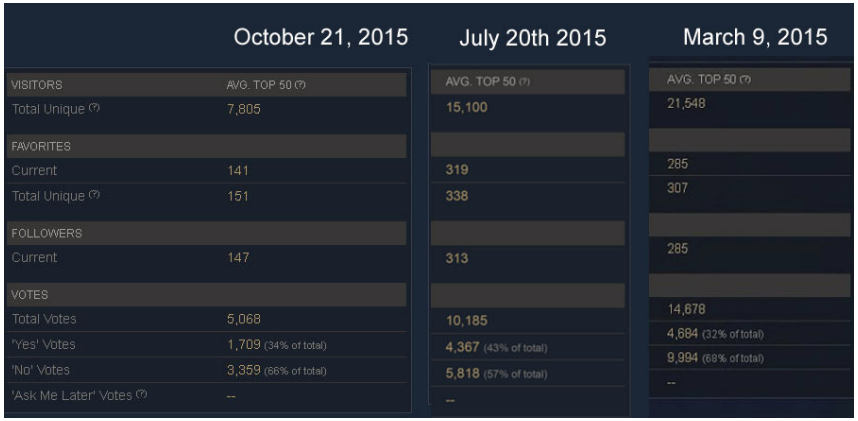


Figure 2: Greenlight example taken from Steam, March 28, 2016.

Yet, at the time of this analysis there were no hard and fast rules for how many up-votes a game needed to receive or how long the process would take. In late 2015, koobazaur reported, “We’ve been hearing that Greenlight is on the decline for quite some time and I think there is no double about that. … I just started a Greenlight for my second game and … I was actually taken aback by how rapid the decline actually is,” and then went on to show voting counts to back his assertion.[23]

22. As of mid-2017 Steam employs the “Steam Direct” system which eschews customer voting or any other curation process. Instead developers fill out some paperwork, pay a processing fee, and have their game undergo testing to ensure it runs and meets some nebulous standards (such as regarding pornography and/or nudity), before it can be released.
23. https://www.reddit.com/r/gamedev/comments/3pp29b/rapid_decline_of_greenlight_interesting_thing_i/



	October 21, 2015	July 20th 2015	March 9, 2015
VISITORS	AVG. TOP 50 (?)	AVG. TOP 50 (?)	AVG. TOP 50 (?)
Total Unique (?)	7,805	15,100	21,548
FAVORITES			
Current	141	319	285
Total Unique (?)	151	338	307
FOLLOWERS			
Current	147	313	285
VOTES			
Total Votes	5,068	10,185	14,678
'Yes' Votes	1,709 (34% of total)	4,367 (43% of total)	4,684 (32% of total)
'No' Votes	3,359 (66% of total)	5,818 (57% of total)	9,994 (68% of total)
'Ask Me Later' Votes (?)	--	--	--

Figure 3: "Relevant graphic."

Other developers challenged that assertion, however, with Pfisch claiming, "The reason for these declines is because they are greenlighting games faster. As in they require less total yes votes before being greenlit and therefore the top 50 spend less total time being in the top 50."[24] However, Pfisch offered no data to support his argument. Other developers felt the process wasn't curated well enough by Valve, which allowed for "shady marketing" practices to taint the process.[25] Xinasha summed up the general mood, writing, "Greenlight has to be one of the most mystery-shrouded stages in the game development process nowadays. There is very little concrete data as to what Valve is looking for in a game – I've seen games with solid yes/no ratios and tons of traffic stall for weeks and I've seen games with 1000 visits and a decent ratio go through in days."[26]

Just as theory-crafting by players can be stymied by developers who refuse to confirm or deny player formulas for success, indie developers who wanted to gain access to Steam had to go through

24. https://www.reddit.com/r/gamedev/comments/3pp29b/rapid_decline_of_greenlight_interesting_thing_i/cw8ixb5
25. https://www.reddit.com/r/gamedev/comments/3pp29b/rapid_decline_of_greenlight_interesting_thing_i/cw8ee4m
26. https://www.reddit.com/r/gamedev/comments/3pp29b/rapid_decline_of_greenlight_interesting_thing_i/cw8ho3f

the Greenlight process for a period of time, and face a system that seemed transparent, but was anything but. Yet even if they did manage to get their game approved, many more questions arose for them to negotiate. Yet the answers they sought could not always be answered by analytics or other developers, either successes or failures.

Once Greenlit, developers faced another immediate question – should they enter the "Early Access" program, which can give users access to alpha as well as beta versions of their game, either free or paid, or wait for the game to be finished and then release it as complete instead? Sergey Galyonkin (better known via his blog name "Steam Spy") has become an influential voice in the game industry as it relates to Steam, based on his detailed analytics of the platform and its game sales. Writing in relation to changing trends and the evolution of the service, he argues "every game still has only one launch event and if you're going to release it in Early Access that date will be it" (Galyonkin 2015a). Galyonkin bases his claims on a proliferation of data, including key points such as, "almost 2000 games get released every year" on Steam, and so he argues that developers must carefully choose when they wish to draw most attention to their game, as they are unlikely to get a second chance.

Whenever developers choose to launch, the system can actively work for and against them. Developers who have been sharing information about their development processes and marketing plans become competitors, both in terms of their current launches as well as prior releases. One growing worry is the increasing backlog of games that Steam players have accumulated, perhaps depressing future sales. One commenter used his own personal experience as an example, yet did not comment on how representative or not his case might have been: "Thanks to bundle buying between 2012 and 2014 my game library ballooned to over 500 games. This destroyed [my] ability to concentrate on one game, I rarely anticipate a game's launch, and my experience

playing most games has this glaze of disinterest."[27] Another poster on the same subject explained that a game's failure might have nothing to do with its quality, but instead with the saturation of particular genres: "The market is soaked with 2d platformers to the point where it's not even worth pointing out anymore… it's just common knowledge."[28] Such comments illustrate how not all arguments are backed by evidence – some still rely on either personal experience or 'common wisdom.' But the more evidence a person can offer for their argument, the more likely it is to be thought of as helpful advice.

Another tactic indies have developed to deal with such realities is careful study of the "Wishlist" system that Steam has been refining, and currently includes as part of its front page listings for games that are on sale. Lars Doucet explained how he carefully mined Wishlist data for his own game to good effect and then reassured other devs that "the front page in the sale is still driven by hand-picked games, [but] there's now a nice customized space that any game can occupy just by being on someone's wishlist" (Doucet 2014).

Front page placement can indeed be key for selling games. *Steam Marines* got voted a "Community's Choice" pick during the 2013 holidays, and even with "a steep discount" on the game's price, "the impact was enormous" on sales, as the developer was quick to show via the following graph. ("Steam Sale – Community's Choice – Worthless Bums – The Blog" 2017)

27. https://www.reddit.com/r/gamedev/comments/3nyuls/master_spy_postmortem_we_didnt_make_a_million/cvtkvnl
28. https://www.reddit.com/r/gamedev/comments/3nyuls/master_spy_postmortem_we_didnt_make_a_million/cvsnzgr

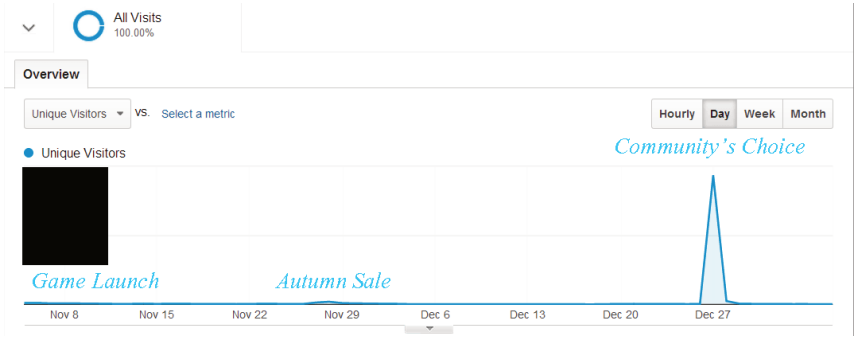


Figure 4: Sales for Steam Marines on Steam, November – December 2013.

Indies will use any such tactic – particularly sales events – to stand out in such a crowded marketplace. Even though prices are often deeply discounted, the increase in volume that sales events generate can override other factors. As one developer explained to a poster on r/gamedev who asked how Steam and developers could possibly profit from "sales of such cheap games," the presence of such sales eventshas changed purchasing habits for many players, such that "there are a huge number of people who will buy a game when it's on sale, but not when it's *not* on sale. Because of this, when a game goes on sale, they [the developers] only make 10% of what they originally did per copy, but they get more than 10x their sale *volume*.… all of your friends buy it on sale and talk about how great it is so you decide to buy it (even though it's no longer on sale). It provides a huge boost to marketing/exposure."[29]

In addition to Community's Choice sales, developers are quick to point to how other sales have benefitted their games, and others that they know about. One commenter in the same post noted an article "detailing how dropping the price of their game by 75% actually earned them as much money as they had earned to date in 8 hours."[30] The game in question – the AAA title, *Left 4 Dead* – was part of a half-price sale which "resulted in a 3000% increase

29. https://www.reddit.com/r/gamedev/comments/1u8zye/steam_sales_and_impossible_profit_margins/cefnx1z
30. https://www.reddit.com/r/gamedev/comments/1u8zye/steam_sales_and_impossible_profit_margins/cefpjqk

in sales" for the title, "posting overall sales that beat the title's original launch performance" (Breckon 2009). That sale wasn't just good news for large developers – Valve announced that during the sale, games that were discounted by 50% had a 320% increase in sales, while games discounted by 75% had a 1470% increase (Breckon).

Yet, even studying data and reading the accounts of other developers will not guarantee success; the value crafting process differs from theory-crafting, perhaps being more art than science. Developers do fail to exceed (or even meet) their expectations, events that are also often turned into data for other developers to learn from, part of the system that Browne described as indie labor. Richmondavid reported on his game's Steam launch and how he tried to do everything right, including getting lucky (or strategic) in picking a launch day when "there were only 7 games released that day. The day on Steam was 'slow' with traffic, so the initial free marketing I got from Steam was spread out across almost 11 hours."[31] Yet even with such a (relative) advantage, and the game gathering "over 11000 views [they] resulted in only 21 sales. A week later, and the sales are at 78." Richmondavid is quick to blame the price of his game – *Seeders* – as the most probable reason for failure – explaining, "I somehow believed that people would pay $8.99 for 10 hours of unique out-of-the-box puzzles. Boy was I wrong. If we could turn back time, I would have priced it at $4.99 without blinking." While some commenters agreed with the price assessment, and others critiqued other elements of the game as reasons for its lack of quick success, others were not so quick to pronounce failure, with one poster saying: "… give it more time before making any dramatic decisions about the success or failure of this and before making any extreme changes to the way you do things next time."[32]

31. https://www.reddit.com/r/gamedev/comments/3irs1k/steam_launch_postmortem/
32. https://www.reddit.com/r/gamedev/comments/3irs1k/steam_launch_postmortem/cukkcxj

That commenter was probably correct – it was too soon to admit defeat. The developer (a one-person team – Bigosaur Games in Serbia) released a major update for the game in October 2015, responding to Steam reviews that puzzles in the game were too difficult, by changing some elements to make them easier to solve, which also allowed more access to the game's story. Figures on Steam Spy for *Seeders*, as of March 28, 2016 show the number of owners of the game at 12,268 and a price of $9.99 USD, suggesting that some commenters were correct, while others were off target. Even the developer's own admission – that s/he should have lowered the price of the game – was probably not an issue, although we cannot know how many of those copies were sold during sales events. The larger point, however, is that selling games has become a moving target, and even failures are hard to call as such, when another sale or update may be right around the corner.

CONCLUSIONS

The videogame industry (or industries) is not what it was 10 or even 5 years ago. Barriers to creating and publishing games have fallen, and perhaps unsurprisingly we have seen an explosion of games coming from many parts of the world. The challenge is no longer getting access to game development tools like console dev kits, or finding a publisher, but instead garnering attention – obtaining press coverage, fighting for attention on platforms like Steam and iOS, and convincing individuals to pay for your game. Thinking of these activities as value-crafting helps us see the new forms of work that developers do beyond 'core' game development, and beyond the simple term 'marketing.' There is much more involved now – as there is in many media and tech fields – than just 'creating a great product' and assuming customers will find it. As Steam Spy writer, Galyonkin, points out, "Steam is no longer a discovery mechanism," but more like a large bookstore crammed with titles (Galyonkin 2015b). Yet Galyonkin also buys into some of the rhetoric that for indies,

enough data, enough research and hard work will result in success. In the same piece where he exhorts indies not to rely on Steam as a guarantee of success (if any of them still do), he also writes that "the fact that your game is better than most games in 1984, 1994, 2004 or 2014 doesn't mean anything. Your game has to be better than everything that is going to be released this year or, preferably, next year as well" (Ibid). But there are too many variables at play to simply believe that a 'great game' or even 'the greatest game' will automatically sell well. Instead, indies now value-craft, researching prices and genre sales figures to determine how to work Steam's analytics and systems (Greenlight, Early Access, Wishlists, Curators, Sales Events) as well as they can. It also means putting the same scrutiny into launching Kickstarter campaigns, soliciting and working with YouTube's Let's Play community and Twitch's live streamers, fostering a fan community, finding niche press that will give you exposure, as well as correctly pricing your game and figuring out exactly when and how to release it. Not to mention, making the actual game.

In addition to this work, and as a way perhaps to 'pay it forward,' indies put a lot of energy into creating documents, data and knowledge, not only for themselves but for other indies. This is another key element of value-crafting. Why do they do this? Why let another developer benefit from your success (or failure) when they may also be a competitor? Browne argues this is part of the indie 'ethos' – part of what comprises indie labor (Browne 2015). Being an indie is signaled not only by the size of your studio or the lack of corporate ownership, but also by a willingness to counter the AAA practices of secrecy and NDAs. Indies are (allegedly) as much about openness as they are about a certain type of game development. This means sharing data and experiences. It also becomes a way to rhetorically construct the process of indie game development – to reassure the writer as well as other developers that there *is* a system involved that can be cracked through proper and detailed analysis. Just like theory-crafting players believe that with enough experimentation they will discover optimal strategies for in-game success, indies are also coming to believe that charting

their actions, graphing their successes and failures, illustrating trends and posting formulas and spreadsheets will alleviate the risk and point towards more success. Of course, theory crafters in games are operating in a space where there is at least the illusion of a meritocracy, and one player's success is not necessarily the downfall of another. But on Steam and other platforms, there are winners and there are losers, and even when indies follow all the guidelines for success, they still might not win. But the long tail never actually ends – it continues to trail on, and so the rhetoric of analytics and technicity continues on as well, gaining more adherents among indie game developers.

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3.

Glitch Horror

BEN Drowned and the Fallibility of Technology in Game Fan Fiction

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ABSTRACT

This paper seeks to define a burgeoning genre of transmedia narratives — "glitch horror" — using a popular "creepypasta" (a work of online horror fiction) entitled *BEN Drowned* as a primary source. The horror of *BEN Drowned* is rooted in the rhetoric of glitches, those infuriating moments when the failures of technology interrupt gameplay and otherwise distort the world

of a game. The emergence of the glitch horror genre and the popularity of narratives like *BEN Drowned* are manifestations of collective anxieties surrounding the fallibility and restrictions of digital technology; it is fiction about the fear of glitchy games, corrupted files, and bad coding. This paper explores glitch horror through the lenses of fan fiction and participatory culture, metafiction, the Freudian uncanny, the fallibility of technology, and fundamental rules of gaming and play.

Keywords

glitch, horror, uncanny, fan fiction, participatory culture, creepypasta

INTRODUCTION

BEN Drowned is a popular "creepypasta," an online horror story typically following the structure of an urban legend. One common source of these narratives, Creepypasta Wiki, describes its content as "essentially internet horror stories, passed around on forums and other sites to disturb and frighten readers." These tales are almost always told as though true, relying upon the reader's suspension of disbelief in order to frighten them. *BEN Drowned* is a creepypasta about a video game, *The Legend of Zelda: Majora's Mask* (Nintendo 2000).

This paper defines "glitch horror" as horror media that exploits anxieties surrounding the fallibility of technology. Examples can be found across media types, perhaps most commonly in film and digital games. The Japanese film, *Ringu* (1998), and its American adaptation, *The Ring* (2002), might be considered early glitch horror: in both films, a ghost possesses a videotape and many of the jump scares come from digital artifacts in the video or even televisions "glitching" and turning on by themselves. Many horror games incorporate self-referential moments of glitch horror; for example, in *Eternal Darkness: Sanity's Requiem*, crucial points

during gameplay are interrupted by fake "errors" such as TV static or even a "blue screen of death" (an error screen), making the horror hit close to home for the player (and potentially even tricking them into restarting their console and losing their place in the game) (Silicon Knights 2002).

Glitch horror is pervasive, but it has yet to be clearly defined as a genre in all of its nuance. There is, however, substantial scholarly work on the broader but closely-related topics of digital horror and media anxiety in horror. Linnie Blake and Xavier Aldana Reyes define digital horror in film as "any type of horror that actively purports to explore the dark side of contemporary life in a digital age governed by informational flows, rhizomatic public networks, virtual simulation and visual hyper-stimulation (2016, 3). Glitch Horror could be categorized as a sub-genre of this type of digital horror. Kristen Lacefield explores a similar type of media anxiety in the aforementioned *Ring* films, observing that they "rehearse many of the cultural anxieties of our time by means of a very simple tale of technology gone awry." (6) Lacefield connects the horror of technology in *The Ring* to cultural anxieties about new and evolving media technologies more generally, most notably citing Jeffrey Sconce's concept of "haunted media," or media to which we attribute a sense of presence and subjectivity (Lacefield 2010, 8; Sconce 2000). *BEN Drowned* is very much a story about haunted media, but its engagement specifically with the concept of glitch goes underexplored. *BEN Drowned* plays upon specific anxieties about not just technology, but the fallibility of technology, its inadequacies and limitations. The medium of a game as source of horror also introduces the factor of player agency as central to the intended function of the technology.

The emergence of the glitch horror genre and the popularity of narratives like *BEN Drowned* are manifestations of gamers' collective anxieties about the restrictions of digital game technology. The limitations inherent to the technology of games often produce unsettling simulations of people and behaviors that channel Sigmund Freud's concept of the uncanny (Brown and

Marklund 2015). The "horror" of *BEN Drowned* is further rooted in the rhetoric of glitches, those infuriating moments when the failures of technology interrupt gameplay, cause data loss, or otherwise distort the play experience, often exposing the uncanniness of virtual worlds in the process. The manipulations of the game that take place in *BEN Drowned* are eerie because they recall real glitches that plagued and still plague *Majora's Mask* players. The act of deleting a corrupted save file, which triggers the events of *BEN Drowned*, is all too familiar to many gamers and recalls negative lived experiences for many fans of the game. Readers of the story remember their own experiences negotiating the technological failings of a beloved game and bring those emotions into their reading.

For a story that began as a series of posts on 4chan.org, an online message and image board famous for weird, often controversial content, *BEN Drowned* has become immensely popular. Since it surfaced in 2010, the story of BEN has proliferated across the internet. Articles were written about it (Good 2010). Message boards were flooded with theories. Cosplays were even born. *BEN Drowned* has achieved such popularity and garnered such a large fan community in part because it expresses latent anxieties about the limitations and obscured inner workings of digital games, as well as gamers' uncanny, contradictory attraction to those frustrations.

In this paper, I first provide further context for *BEN Drowned* and summarize its plot. I then establish the story as a locus of participatory culture, as a work of fan fiction, and as a work of metafiction. Subsequently, I examine *BEN Drowned* through the theoretical lenses of accidental horror and the Freudian uncanny. I then explore the concept of media that express cultural anxieties, and specifically anxieties about the fallibility of technology. Next, I look at how the game in *BEN Drowned* breaks with Huizinga's concept of play, and examine the risks therein. Finally, I briefly reflect upon the cultural implications of glitch horror and the potential for future research.

BEN DROWNED

BEN Drowned revolves around a haunted video game cartridge, specifically a copy of *The Legend of Zelda: Majora's Mask*. Like most creepypastas, it is written in the first person, presented as a true story of events that the original poster, who goes by the username "Jadusable," supposedly experienced. In September 2010, Jadusable posted the story to 4chan over the course of five posts (Good 2010). Over time, these posts became the popular and widely disseminated creepypasta, now typically found compiled into a single post. The posts are accompanied by YouTube videos that Jadusable recorded of his gameplay, making it a multimedia creepypasta.

In *BEN Drowned*, Jadusable is a college sophomore who has recently procured an old Nintendo 64 game console. In search of cartridges, he goes to a yard sale and stumbles upon an old copy of his favorite childhood game, *Majora's Mask*.

Upon playing the game, Jadusable notices there is an old save file titled "BEN." Jadusable begins his own game and soon starts noticing strange glitches. The non-player characters (NPCs) sometimes call him Ben instead of the name he has given his avatar, Link. Hoping to fix the problem, he deletes the save file named "BEN," to no avail. The dialogue in the game begins playing at the wrong time, "almost as if the game was trying to communicate with me." NPCs begin appearing in areas where they don't belong and events occur in areas where they were never meant to take place.

Attempting to exploit a known glitch in the game, Jadusable unlocks an altered version of the game's "Clock Town" area: it is completely empty of NPCs; textures are missing; the theme music plays backwards; laughter plays in the background when it shouldn't; and perhaps most eerily of all, Jadusable is unable to leave the area. When Jadusable tries to drown his avatar in hopes of spawning elsewhere, it triggers a flash of horrible images

and sounds constructed from real components of the game, all of which readers can experience for themselves through the attached gameplay video. The "Elegy of Emptiness" statue, an element from the game that looks like a simplified version of Link, appears and begins following Jadusable's avatar. The game glitches further, Link performing animations not from the game, the screen cutting to creepy images randomly, and the statue following the avatar all the while. Two other NPCs – the "Skull Kid" and the "Happy Mask Salesman" – begin to appear, behaving eerily and eventually attacking Jadusable's Link, killing him over and over again with death scenes that Jadusable doesn't recognize from the game. Jadusable is eventually returned to the title screen, where he sees that his save file has been renamed "YOUR TURN." The "BEN" save file also returns.

As the story unfolds, it becomes apparent that the game cartridge is possessed by the spirit of its previous owner, a boy named Ben. The cause of his death, a key part of the mystery, is revealed when a new save file named "DROWNED" appears after the save file "BEN." Jadusable writes: "The two save files told me his fate. As I suspected, Ben was dead. He had drowned. The game obviously isn't through with me – it taunts me with the new save files – it wants me to keep playing, it wants me to go further." The game, typically a source of comfort for him, has become a nightmare.

The penultimate post is supposedly written by Jadusable's roommate after Jadusable has dropped out of school due to psychological trauma, having spent all his time playing the game and obsessing over BEN. Then, in the final post, Jadusable returns, revealing that he lives in a single dorm room and that the previous post was written by BEN, who Jadusable claims has been possessing his computer, blocking his attempts to reveal the truth, "manipulating and changing the files." Jadusable has been sending hidden messages to the reader in the YouTube videos he uploaded by having Link equip specific items, creating a code, relying on the viewers' knowledge of the game. He is now finally able to

communicate freely because he is using a shared school computer, and writes that this is his last post and he is burning the cartridge.

With this final post, Jadusable attaches a text file of his notes, including conversations with BEN using a cleverbot, an online program that uses artificial intelligence algorithms to chat with users. These lengthy notes reveal the extent to which BEN was controlling Jadusable's communication with his readers, exposing the original poster as an unreliable narrator. They also introduce a number of subplots, including vague mentions of the "Moon Children," a cult somehow associated with BEN. He warns readers to download only the text file, and not to rip or capture the YouTube videos in any way for fear of spreading BEN.

After the final post, *BEN Drowned* morphed into an alternate reality game, expanding from the hidden codes in the YouTube videos. The threat of BEN became the greater threat of the "Moon Children," a mask-wearing suicide cult that seduces and then kills off its members. Although fascinating, the alternate reality game and the Moon Children fall outside of the scope of this paper; its focus is the popularly distributed creepypasta, consisting only of Jadusable's original five posts and their attachments.

PARTICIPATORY CULTURE

BEN Drowned, as a work of fan fiction, is a part of the participatory culture surrounding *The Legend of Zelda*. In *Fans, Bloggers, and Gamers: Exploring Participatory Culture*, Henry Jenkins outlines three trends in participatory online culture that help to explain the resonance of the creepypasta with *Zelda* fans:

1. New tools and technologies enable consumers to archive, annotate, appropriate, and recirculate media content;
2. a range of subcultures promote Do-It-Yourself (DIY) media production, a discourse that shapes how

consumers have deployed those technologies; and

3. economic trends favoring the horizontally integrated media conglomerates encourage the flow of images, ideas, and narratives across multiple media channels and demand more active modes of spectatorship. (2006, 135)

BEN Drowned is in itself appropriative media created and disseminated exclusively via newer technologies or, more specifically, democratized knowledge of technology. Alex Hall (allegedly the man behind Jadusable and *BEN Drowned*) went beyond being a mere consumer or fan of *Majora's Mask* by manipulating the game and rewriting its code to create new media content, an activity that is the epitome of DIY media production and is only possible through the proliferation of amateur knowledge of coding and game design (Hall 2014). Through the inclusion of the YouTube videos, *BEN Drowned* capitalizes on the technology and media available, encouraging active spectatorship and diversifying the media through which the story is told. In these ways, *BEN Drowned* has successfully engrossed and engaged readers, making it one of the most well-known creepypastas about games.

As T. L. Taylor demonstrates in *Play Between Worlds: Exploring Online Game Culture*, fan activity outside of the game is an essential part of its community-building. Taylor focuses specifically on online fan communities, intent on revising inadequate conceptions of internet culture, "the earlier formulations that saw online life as simply always referring back to the offline" (2006, 19). Taylor calls for online and offline spheres to be viewed as interwoven and overlapping (2006, 19). Fan fiction and creepypastas are part of extensive online communities where people exchange stories and theories, collaborate, and interact with texts. Their implications also extend offline, as they express cultural anxieties that exist both online and offline.

Shira Chess and Eric Newsom, in their examination of the "Slender Man" (a sort of urban legend who is the subject of many creepypastas), refer to this as the "open-sourcing" of horror conventions. This describes the participatory nature of these texts, the way in which online storytelling relies on voluntary participation and negotiation (Chess and Newsom 2015, 73-74). As prime examples of this, they cite the forums of the Something Awful community and the online lore surrounding the Slender Man. The online forums of Something Awful are where "The Slender Man was established, debugged, and negotiated through a complex set of generic, yet evolving, expectations" (Chess and Newsom 2015, 62). Although not composed by a collective author in the same way, *BEN Drowned* takes this "open-sourcing" of horror further still in that Alex Hall used open source software to modify the game as it appears in the associated YouTube videos (Hall 2014). *BEN Drowned* is therefore evidence of a larger open-sourcing of game fandom, in which individuals can modify their own favorite games, creating and sharing new experiences.

The fact that creepypastas are also collective narratives that are disseminated, annotated and commented upon by a large fan base is significant because it identifies *BEN Drowned* and narratives like it as complex, technology-aided negotiations of vast sums of information and influences. In *Uncreative Writing*, Kenneth Goldsmith looks at the ways in which technology, and particularly the internet, has become an integral part of the writing process. He describes a new poetics of appropriation in which "writers function more like programmers than traditional writers," gleaning ideas and text from across the internet, deconstructing and reassembling information by copying, pasting and otherwise recontextualizing it (Goldsmith 2011, 16-17). The sharing and reposting of *BEN Drowned* across internet forums is an essential part of the creepypasta medium, and broadens the cultural implications of the narrative. The anxieties about flawed technology expressed in the story are collective fears, validated and reinforced through repetition.

FAN FICTION

BEN Drowned is a work of *Legend of Zelda: Majora's Mask* fan fiction at heart, in addition to being horror fiction. As Jana Rambusch, Tarja Susi, Stefan Ekman and Ulf Wilhelmsson have observed, narratives in fan fiction are cultural tools — they allow fans to learn about and participate in fan communities (2009). Understanding the creepypasta's role in stimulating community-building among *Legend of Zelda* fans is essential to understanding its popularity and influence over readers.

Although *BEN Drowned* is a multimedia work, it is built upon a framework of traditional text-based fiction, the written content of Jadusable's original posts. In "Fictional Worlds in the Digital Age," Marie-Laure Ryan discusses the creation of transfiction, or "producing and posting texts that complete, modify, or stretch in time the worlds of preexisting literary texts, or that transpose their plots and characters into new environments" (2008). Fan fiction falls squarely within this definition (Rambusch et al. 2009). Ryan observes that internet communities focused on transfiction can foster more participatory and imaginative interaction than video games themselves. Comment threads, YouTube videos, and the extended alternate reality game have all created an intensely participatory culture surrounding *BEN Drowned* that has taken on a life of its own under the umbrella of *Legend of Zelda* fan culture.

Fan fiction usually relies heavily on insider knowledge, and *BEN Drowned* is no exception (Rambusch et al. 2009). Jadusable's writing is steeped in game jargon and terminology that assumes the reader is intimately familiar with *The Legend of Zelda: Majora's Mask*:

> Now, some of you more hardcore Majora's Mask players know about the "4th Day" glitch – for those who don't you can Google it but the gist of it is that right as the clock is about to hit 00:00:00 on the final day, you talk to the astronomer and look through the telescope. If you time it right the countdown disappears and you essentially have another day to finish whatever you were doing.

The story marks a distinction between established, recurring glitches that have become a part of the game for many fans, and unexpected, abnormal glitches. The 4th Day glitch is an "established" glitch, but those caused by BEN are not. This distinction is only possible through an intimate knowledge of preexisting glitches in *Majora's Mask*, which Jadusable possesses; by referring to "some of you more hardcore players," he at once invites the reader to share in his elite knowledge, and dismisses any potential readers who might be ignorant of such concepts (they "can Google it").

Rambusch, Susi, Ekman and Wilhelmsson observe that all game-based fan fiction shares the common factor of the game's environment. This typically means that "writers don't bother much with rich descriptions," but instead focus on "character development and player experiences." As they write, "The message to potential readers is, in other words, a very clear one: If you don't know the game, then don't read my stories; they won't make any sense to you" (2009, 5).

Fan fiction can illuminate the relationship between gameplay and narrative. It complicates dialogue between the two as it "moves the actual activity of playing a game back into the narrative space, and also hands back the narrative tool to the player (or fan fiction writer)" (Rambusch et al. 2009, 1). Fan fiction introduces a new type of interactivity to games and their communities in which players can interact with and manipulate the story itself, including pasts and futures not included in the original game.

Fan-crafted narratives also have the potential to facilitate the identification processes of players with their avatars. Reading extensive fan fiction and other media associated with a character from a game can "evoke underlying processes of identification and empathy with a character, something a game itself might not always fully provide" (Rambusch et al. 2009, 2). In *BEN Drowned*, this process of identification is twofold: readers identify with Jadusable, through the story's first-person narrative, and

Jadusable identifies with his avatar, Link, within the story, as Jadusable feels his fate and very safety is increasingly tied to him. He makes this explicit: "I had four hearts to my name and the Hero's Bow, but at this point I wasn't even considered [sic] for my avatar, I felt that I personally was in some kind of danger." Much of the horror of the story is rooted in this conflation of player and avatar identities, a common gaming experience with which the readers can then identify in turn.

METAFICTION

It is crucial to note that *BEN Drowned* is not only a work of fan fiction, but of meta fan fiction, in that it is fiction about a fictional world (the game) that takes place within the real world. Meta fan fiction is a subset of metafiction, which James Cox defines as "Fiction that points out its own fictionality… fiction that is self-aware" (2014). He examines metafiction within games more broadly, but his classifications can be applied to game fan fiction as well.

The previously-mentioned game, *Eternal Darkness: Sanity's Requiem*, is a prime example of metafiction; it is what Cox terms "immersive metafiction," in that it includes "fakeouts" such as simulating that the player's save file is being deleted, incorporating the real world and the means of play into the fiction (Cox 2014). The cult popularity of this game endorses the idea that playing upon anxieties surrounding technological errors is compelling to gamers. The "Arsenal Gear" sequence in *Metal Gear Solid 2* (Konami 2001) is an example of Cox's "internal metafiction," in which the characters allude to a fourth wall but do not break it – suspicious but remaining ostensibly unaware that they are in a video game and thus keeping the metafiction self-contained (2014). In the sequence, an NPC begins to address the player, rather than their avatar, urging them to turn off the game console. The pervasiveness of metafiction in games is itself evidence that

game culture tends to be preoccupied with its underlying technologies.

According to Cox's rubric, *BEN Drowned* is a work of "external metafiction," in that within it, the developers (Alex Hall or BEN, depending on the level of fiction one examines) communicate directly and externally from the game with players, readers or viewers. Common examples of this in games are "Easter eggs": hidden messages or rewards left by developers for the most dedicated fans to find (Cox 2014). In the YouTube videos of *BEN Drowned*, Alex Hall hid secret codes meant to communicate with the viewers in a way not dissimilar from Easter eggs, although under fictional duress. This metafiction maintains externality because the creepypasta never reveals itself to be fiction.

Although *BEN Drowned* is an external metafiction at the broadest level, it contains elements of internal metafiction as well. In an example of this within the story, Jadusable notes that "Link turned to face my screen, standing upright mirroring the statue, looking at me along with his copy. Literally staring at me. Whatever was left of the 4th wall was completely shattered." The moment is unnerving because it disrupts the fictional game convention that a player "is" the avatar within the game world: the avatar itself is acknowledging the screen. The game within the story is behaving like metafiction as well in this moment.

ACCIDENTAL HORROR

In "*Animal Crossing: New Leaf* and the Diversity of Horror in Video Games," Ashley Brown and Björn Berg Marklund investigate how non-horror games such as *Majora's Mask*, or in their example, *Animal Crossing: New Leaf* (Nintendo 2013), can produce unsettling or scary experiences (2015). They find that these seemingly innocuous games can become eerie through clumsy simulations of reality and human behavior, limited player agency, and flawed systems of logic. Avatars and NPCs not behaving as they should, invisible walls, frustratingly constrained

choices, illogical circumstances: all of these frequent elements of games that betray that they are in fact games, and not reality, can "produce a type of horror that consists of a slowly creeping psychological dissonance" (Brown and Marklund, 2015, 2).

Brown and Marklund explore the accidental uncanny of their game via another creepypasta, *The Terrible Secret of Animal Crossing*, in which the author, Chewbot, exploits the illogical nature of the in-game world by explaining away its logical fallacies with sinister theories (2015, 2). Flawed logic, it seems, is a focal point for horror fan fiction about non-horror or kid-friendly games. In *BEN Drowned*, the strange logic of being "magically" transported to places becomes a part of the horror that BEN wreaks. In reality, there is little difference between how "fast travel" (teleportation that spares the player repetitive backtracking) works in *Majora's Mask* and many other games, and what happens to Jadusable's Link several times at the ghost's whim; but Jadusable marks these as aberrant, illogical events, because they don't follow "what's supposed to happen" in the game. One example is when he attempts to use the 4th Day glitch, and instead of traveling where he is "supposed to" (according to an established glitch, rather than the game developers' design), he is transported to the location of a difficult boss battle where BEN torments him.

The macabre themes of fan media about games such as *The Terrible Secret of Animal Crossing* and *BEN Drowned* reflect the powerful impact of uncanny or accidental horror in games (Brown and Marklund 2009). Brown and Marklund specifically analyzed player-NPC interactions based upon three themes prevalent in literature about traditional horror games: the loss of agency, the Freudian uncanny, and the Heideggerian uncanny; the first two are particularly relevant to *BEN Drowned*. "Loss of agency" usually entails fighting some sort of monster that is impeding agency, running and hiding, or both (Brown and Marklund 2015, Kirkland 2009). They also point out that "constrictions of agency and uncanny elements, which are central aspects in horror, are part of most games simply due to technology and interface restrictions."

However, in most horror games and in much of horror fan fiction, like *The Terrible Secret of Animal Crossing*, this loss of agency lies within the world of the game: one's avatar can't move freely because it doesn't have a weapon and there are monsters nearby, or because it is somehow trapped. In *BEN Drowned*, as a work of metafiction, the loss of agency also occurs at a level outside of the game, when Jadusable can no longer play his beloved game as intended.

THE UNCANNY

In his influential 1919 essay "The Uncanny," Sigmund Freud defines that distinct fear of something that is familiar yet strange at the same time. He defines the uncanny as "that class of the frightening which leads back to what is known of old and long familiar" (1976, 620). Uncanny horror requires a familiar element, like an old favorite video game (Brown and Marklund 2015, 4). As Brown and Marklund note, the Freudian uncanny is also both repetitive and pleasurable, eliciting a cycle of allure and repulsion:

> It is possible to recognize the dominance in the unconscious mind of a 'compulsion to repeat' proceeding from the instinctual impulses … a compulsion powerful enough to overrule the pleasure principle, lending to certain aspects of the mind their daemonic character (Freud 1976, 632).

Games of all kinds, particularly challenging ones, inherently play upon this compulsion by motivating players to try difficult sequences over and over again, "punishing" themselves for pleasure. Difficulty settings such as "Nightmare Mode" in many contemporary games like *Doom* (id Software 2016) reflect this phenomenon by offering a torturous challenge for even the most experienced players. The familiarity of the game becomes a part of the horror as the repetition becomes tiring and frustrating, yet players will "die" over and over again to beat a level.

Jadusable actually makes the Freudian nature of his work explicit at one point. In the beginning of the story, he procures the *Majora's Mask* cartridge from a vaguely sinister old man at a yard sale. The man also has a pile of Rorschach test inkblots for sale, one of which reminds Jadusable strangely of Majora's mask in the game – before the man even shows him the cartridge: "I just thought that since I was secretly hoping to find that game at these garage sales, some Freudian bullshit was projecting itself into the inkblots, but given the events that happened afterward I'm not so sure now" (2010). The uncanny resemblance of the inkblots to the mask in the game is the first substantial hint in the story that a deeper conspiracy is afoot, foreshadowing the psychological horror to come.

The scariness of the Elegy of Emptiness statue, the main in-game aggressor in *BEN Drowned*, can be explained using the concept of the uncanny valley, as introduced by Masahiro Mori in 1970. The "uncanny valley" refers to the phenomenon in which human approximations that approach, but do not achieve, verisimilitude can be off-putting or even scary. If one graphs the relationship between affinity, or acceptance of a facsimile, and human likeness, the acceptance of an entity rises gradually as likeness increases, but plummets steeply before rising again towards total acceptance of perfect human likeness (Mori 1970). As discussed by Ewan Kirkland, many avatars can be considered uncanny representations of human beings, and intentional horror games often exploit this fact (2009). Brown and Marklund extend this to NPCs as well, with their "glassy, dead-eyed stare … combined with their programmed and zombie-like movement patterns" (2014, 5).

The Elegy of Emptiness statue, a statue that appears in the game when Link plays a specific song, looks like the character Link, but simplified, like a doll. Much of the horror within the story comes from this statue's interactions with Jadusable's avatar. Jadusable frequently refers to its "haunting facial expression," and at one point compares it to the "Weeping Angels" from *Dr. Who*, malicious statues that can only attack people when they are not

being watched, often appearing out of nowhere in jump scares (2007). In the YouTube videos, Jadusable makes use of similar jump scares with the Elegy of Emptiness statue. This uncanny resemblance to the avatar, and the inherent unnaturalness of a statue, an approximation of life behaving like a living entity, further contributes to the horror in *BEN Drowned*.

THE HORROR OF FALLIBLE TECHNOLOGY

Brown and Marklund found that fear in games can often come not from monsters or jump scares, but from playing upon common, everyday anxieties (2009, 5). Subtle themes of debt, isolation, persecution or societal pressures can infuse even the most innocent-seeming of games with subtle (or not-so-subtle) horror. As a result, works of fan fiction about these games often serve as vessels for these types of anxiety, as in *The Terrible Secret of Animal Crossing* (Brown and Marklund, 2009). `

Chess and Newsom further explore the way that online horror fiction and the communities that create it explore cultural anxieties through the connotations they evoke, lending expression to shared concerns and common frustrations (2015, 21). Horror generally functions on metaphorical levels, evoking common fears and inner conflicts like those of the unknown, of the other, or of oneself (Chess and Newsom 2015, 51). Like the Slender Man, *BEN Drowned* is a product of digital spaces; perhaps more so in that the plot unfolds across them within the story as well. It plays upon broad, existential anxieties like most horror, but it also explores anxieties specific to technology and its failures, especially online and in games. These anxieties have roots in the technological fallibility of games — their vulnerability to glitches, bugs, pop-ins, and corrupted files.

The *Legend of Zelda* series, and *Majora's Mask* in particular, as an older, more obscure entry in the franchise, often connotes nostalgia for the days of older consoles like the Nintendo 64 that Jadusable has so proudly procured. There is a connection between video

game nostalgia and glitch culture: contemporary games that seek a retro feel will often simulate the glitches of older games and systems (Altice 2015, 4). In *I Am Error*, Nathan Altice observes that the glitches and technical flaws that plagued the Nintendo Entertainment System (NES) and Nintendo Family Computer (Famicom) consoles became a part of gaming culture, embraced by players and game developers alike. Glitches can expand the experience of play, and even take on mythic roles, such as in the case of the "4th day glitch" that Jadusable references in *BEN Drowned* (Altice 2015, 4).

The net art community has been exploring the aesthetics of glitches for some time. One notable example is JODI's "Max Payne Cheats Only," a gameplay compilation of "cheats," or unlockable options hidden by developers that alter gameplay in some way, from the game *Max Payne* (JODI 2004; Remedy Entertainment 2001). As the player executes these cheats, the graphics in *Max Payne* glitch spastically in a variety of ways, the avatar stuck partially in a wall, or the camera peering inside of the avatar, revealing planes of texture where there should be flesh. Another example is Eva and Franco Mattes' "Synthetic Performances," in which the artists gave online performances in the virtual world *Second Life* (Linden Lab 2003); graphics distort and cut through one other as the artists' avatars writhe in midair or incessantly repeat animations as though stuck in a feedback loop (Mattes 2009-2010). The visual flaws and errors in these works become mesmerizing as the viewer watches uncannily realistic avatars behave contrary to the laws of physics and anatomy, evoking a fascinated unease in the viewer. The horror of the YouTube videos in *BEN Drowned* operates similarly to these works, as the avatar's strange animations disturb Jadusable and the viewer.

WHEN THE GAME STOPS BEING FUN

BEN Drowned also plays upon fears and anxieties about games breaking the rules of play – becoming involuntary, addictive, even life-threatening. Part of the "horror" of the story comes from the game not behaving like a game should. As established by Johan Huizinga, play must be voluntary, able to be deferred or suspended, and never imposed by physical need or moral duty. Play cannot be a task, disinterested, or appetitive, but must be limited, confined (1955). When Jadusable begins to fear for his real safety, the game within the story breaks these rules; it does so further when BEN escapes the confines of the console and begins controlling Jadusable's computer.

Video games have the potential to break with Huizinga's definition of play when they become too addictive or take on a role in the player's life that is no longer playful, as is possible with any type of game. *BEN Drowned* exploits anxieties surrounding this as well. As the story progresses, Jadusable supposedly withdraws from society; in the final post, when thanking his fans, he writes: "This semester I really didn't have any friends, or rather, I stopped paying attention to them." By playing upon the trope of the addicted, antisocial gamer, the story triggers societally-induced anxieties in the reader about realizing this stereotype.

Ultimately, one of the risks inherent to creepypastas and certain other forms of horror fiction is that they can be interpreted as truth on a level not intended by the author. Chess and Newsom's book documents a case in which two young girls attacked another, claiming to act upon the directions of the Slender Man, about whom they had been reading creepypastas (2015). Luckily, there have been no major incidents involving *BEN Drowned*; however, even a cursory skimming of online forums about the story reveals that its readers occasionally fall victim to the same misunderstanding. One Reddit commenter begins:

> Okay, so in case you can't tell by the title, I don't believe the Ben Drowned Creepypasta. It could easily have been made using hacks, and I feel this is the most likely explanation. In fact, my friends and I generally make fun of it by naming our save files in Majora's Mask "Ben". However, of all these times, I did find something once. Something that made me think that maybe there's some truth to the Ben Drowned story… (GingahNinja47 2014)

It is unclear whether this commenter is genuinely suspicious that BEN may be real, or simply composing his own creepypasta – he goes on to claim he has been plagued by strange images from the story while browsing the internet. Regardless, his story is part of the ever-expanding fiction that is *BEN Drowned*, which is presented as truth, debunked as fiction, then re-theorized to be true in a different way. These activities ironically support the very anxieties about the fallibility of technology that make *BEN Drowned* scary – in short, readers, like the Reddit commenter above, end up convincing themselves to be scared, constructing new, supposedly "truthful" realities on top of fictional realities that have been proven to be such. This is true of both genuinely confused fans of creepypastas, and *knowingly* fictional creepypastas about other creepypastas, as may be the case with the aforementioned Reddit commenter. On the internet, there is rarely a reliable way to tell the difference.

CONCLUSION

By incorporating the hallmarks of technology-related frustrations like glitches and other limitations inherent to digital games, *BEN Drowned* uncannily plays upon the all-too-familiar feelings such events can evoke in gamers. The story also evokes connotations, both negative and positive, associated with the immersive nature of videogames. At one point Jadusable writes: "Not even once did the thought of turning off the console occur to me, I don't know why, I was so wrapped up in it – the terror felt all so real." This personal investment in the characters and events of a

game is familiar to almost any gamer, and its presence as a theme throughout the story further explains the creepypasta's popularity.

As T.L. Taylor asserts, "What happens in virtual worlds often is just as real, just as meaningful, to participants" as that which happens in reality (2006, 19). The stories told in and about these worlds have meaning as well, as manifestations of culturally dominant preoccupations and fears (Chess and Newsom 2015, 51). *BEN Drowned* is one of many stories that share themes related to the fallibility of technology; these stories make up an emerging transmedia genre, glitch horror. The increasing prevalence of glitch horror narratives is significant because they express cultural anxieties surrounding the restrictions of digital technology. These anxieties influence society and culture; consciously or not, they help shape our opinions and decisions, and are therefore worth recognizing, exploring, and understanding.

There is significant further research to be done on the genre of glitch horror, new *BEN Drowned*s and associated fan communities to be discovered and explored. Also ripe for further investigation is the relationship between the contradictory attraction and repulsion of the uncanny, and creepypasta fans' desires to scare themselves and to believe scary stories to be true.

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4.

Exhibition Strategies for Videogames in Art Institutions

Blank Arcade 2016

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ABSTRACT

While debate over videogames' cultural status can still become contentious, theorist Bruce Altshuler describes the contemporary exhibition form as a route into art history, and exhibitions of videogames and their display choices have already drawn videogames into the discursive construction of the history of art. Therefore, contextualizing past exhibitions of videogames and

examining curatorial practices is a vital part of shaping an interdisciplinary history of videogames. This paper summarizes my research and practical work in games curation within this context through a case study of *The Blank Arcade 2016*, specifically focusing on unexpected ways spectatorship and interaction coexist in videogame exhibitions. By reviewing the process of exhibition organization and the resulting visitor feedback, and finding intersections in game studies and contemporary art perspectives on tensions between spectatorship and interaction, I reflect on the effectiveness of the present curatorial process at addressing the varied ways gallery visitors experience videogames as an art object or aesthetic experience.

Keywords

Art games, art history, curation, game exhibitions

INTRODUCTION

A frequent tension that emerges in the exhibition of videogames in art spaces is how spectatorship, interaction with the game, and interaction between visitors coexist in the exhibition space, and complicate the understanding of where a videogame as an art object begins and ends. When the Corcoran Gallery in Washington, D.C. temporarily welcomed arcade machines into its halls for its ARTcade, held in 1983, the institution was making certain aesthetic, historical and value judgements about videogames. Since then, many art and design institutions have more formally incorporated videogames and similar software-based works into their exhibitions and collections. Bruce Altshuler describes the temporary exhibition, the now-dominant form in which contemporary art is conveyed, as a route into art history (2008, 11). Additionally, new media scholar and curator Beryl Graham also describes the function of the new media exhibition as a "testbed," the success of which determines later collection, conservation and historicization (2014, 1).

For over 30 years, exhibitions of videogames have been temporarily on display at internationally renowned art institutions, recently the V&A in London, Smithsonian American Art Museum, and The Museum of Modern Art in New York. Major touring exhibitions have traveled across countries and between continents. While many recent exhibitions of games emphasize the interactivity of the form and offer a large number of interactive displays, to fully account for the ways in which videogames are experienced as art objects or aesthetic experiences, it is important to also consider how alternative modes of engagement, like spectatorship and collaboration, have shaped both the reception of videogames and the exhibition of art.

During 2016, I co-curated the third iteration of *The Blank Arcade* with its original organizer, Lindsay Grace. This exhibition launched during the Joint DiGRA/FDG Conference in August 2016, and ran through October 2016 in the Hannah Maclure Centre (HMC), the institutional art gallery of Abertay University in Dundee. The featured videogames and other forms of interactive technology were selected from a submissions pool by the co-curators, and evaluated for their playfulness, innovative qualities, and how they expanded mainstream conceptions of videogames and play. Existing knowledge of the history of exhibitions of videogames informed my curatorial approach, and shaped my reflection on the effectiveness of the exhibition itself, and visitor feedback from surveys contributed to my evaluation and indicated new areas to investigate.

HISTORICAL BACKGROUND

Art exhibitions displaying videogame-based works span a broad variety of production and display contexts. Lynn Hershman Leeson developed one of the first interactive media installations, *Lorna*, on laserdisc from 1979 to 1983, which describes itself as “the world’s first interactive video art disc game.” Shortly afterwards, in 1983, a piece of interactive art directly

contextualized within videogame culture; *Mike Builds a Shelter*, a homebrew game installed in a custom arcade cabinet, debuted. In the same year the Corcoran Gallery in Washington, D.C. staged an exhibition of arcade games for a fundraising event, a choice framed as an initial exploration of incorporating videogames into the category of the arts (Trebbe, 1983).

As artists were introducing interactive technology, and specifically videogame technology, to museum exhibitions, institutions also began to consider the impact of this technology. In 1989, the Museum of the Moving Image put on the exhibition, *Hot Circuits*, which presented a collection of playable arcade machines, presented not as historical artifact or technological advancement, but as living culture. This exhibition indicated a change in philosophy, expanding the institution's conception of what fell under the category of "moving image" (Slovin, 2009). *Hot Circuits* retained many of the contextual elements that would have been present if encountering the games on display in an arcade. The cabinets were preserved in full, and visitors were given a set number of tokens (and could purchase more) to play the machines.

During the 1990s and early 2000s, other institutions would offer counterpoint exhibitions exploring the manifestations of games and software in a contemporary high art context. Beryl Graham's 1996 exhibition at the Laing Art Gallery, *Serious Games*, is an early example that reveals many challenges and preconceptions relevant to presenting videogames in a contemporary art space. Graham notes that the show was not intended to be primarily about the technology supporting the works, but the interaction involved with activating them, and this is demonstrated by some of the included works not having technological components at all. This usefully contextualized videogame-based works in the tradition of previous playful, interactive, and rule-based forms of art production, such as Fluxus, Conceptual and Performance Art. Despite this, Graham still noted some institutional prejudices in how the show was handled. For example, while able to avoid stereotypical "computer lettering" or "fractal" graphic design, the

battle was lost trying to avoid a "fun for kids" marketing angle, because of the presence of the word "games" (Paul, 2008).

Other exhibitions followed, focusing on artists using game-making and modding tools to create works that were primarily situated within new media or net.art circles. The exhibition *Games:Computer Games by Artists* (2003), curated by Tilman Baumgärtel, Hans D. Christ and Iris Dressler, was in part inspired by a curiosity about the potential offered by homebrew gaming and commercial videogames adding more options for modification, and contextualized this in artistic practice by relating modification to "appropriations" and "détournements." While noting the disproportionate marginalization of games as a cultural form, only pieces presented as "artists' approaches" were selected for the show, maintaining an awareness of, but simultaneous separation between, homebrew and modding communities and the art world (Paul, 2008).

In 2000, Antoinette LaFarge and Robert Nideffer curated *SHIFT-CTRL* for The Beall Center for Art and Technology at UC Irvine. This show presented the work of many net and new media artists who had a history of working with videogames and game mods, but also featured two videogames that were popular commercial products, *The Sims* and *Ultima Online* (LaFarge, 2015). Between *Hot Circuits* in 1989 and *Game On* in 2002, this was one of the very few popular commercial videogames on display in art institutions, without artist mods placing it in the tradition of appropriation-based work.

Game On (2002), alternately, attempted to capture a broad view of the form, presenting over 150 videogames between several locations and covering topics from the 1960s to the present (as well as updating selections with each iteration of the show.) *Game On* also set a major precedent for commercial games beyond the arcade era being presented in an arts institution. While other exhibitions displaying "artist's takes" on videogames in the spirit of appropriation or critical response continued, *Game On* toured

multiple countries in the following years, entering many different art and design institutions, presenting the idea that videogames do not necessarily need the intervention of existing artistic approaches to fit into the narrative being produced by art and design museums. This would shape eventual collecting and exhibition strategies adopted by major institutions like MoMA, the V&A and the Smithsonian American Art Museum.

With the spread of the internet and more accessible software tools for game creation in the late 1990s and early 2000s, the weaknesses in the binary categorization of games as commercial or artistic became apparent. Sites like Newgrounds, GameJolt and itch.io, as well as tools like Macromedia Flash, GameMaker, Unity, Twine and many others, made the creation and distribution of games by individuals more broadly visible and popular. The sharing of mods and other player-customized content, as well as performances of gameplay in speedrunning and Let's Play communities being compiled and distributed online also made the role that spectatorship and collaboration had in the reception of videogames more prominent.

Presently, there is a broad range of methods of production, and the scale of the production method has less of an effect on visual aesthetic and gameplay design due to the accessibility of tools and knowledge provided by the internet, as well as increasingly sophisticated and affordable home PCs. Many videogames created within this context, from experimental works to those modeled on mainstream genres and conventions, were gathered under the umbrella of "indie." Indie "arcades" brought together many of these games, such as Indiecade, which started in 2005, and similar exhibitions (such as *The Blank Arcade* itself), which provided another influential exhibition style for videogames.

The commercial and critical success of several independent games, created by single authors or a small team of developers, as well as an ongoing conversation about the stylistic influence of well-known figures from large game studios, created a renewed interest

in games, both as authored objects and stylistic works of art. This is reflected in two major exhibitions from 2012, *Game Masters* and *The Art of Video Games*. Originating at the Australian Centre for the Moving Image and Smithsonian American Art Museum respectively, both exhibitions made arguments through their selections that certain games bear the print of some sort of particular stylistic or expressive authorship, whether from an independent developer, producer, or large studio. The focus on authorship by particular figures or well-known companies helps to establish videogames as a form belonging in art institutions, because of the art world's similar focus on tracing styles, relationships of influence, and artists' careers. However, historian Raiford Guins criticizes this approach, noting that, when applied to videogame production, it tends to focus on large corporations or high-level producers or directors, and anonymizes other artists who may have made important contributions to the final product (Guins, 2014).

These exhibitions were followed shortly by *Applied Design* (2013), The Museum of Modern Art's exhibition celebrating their first acquisition of videogames, including commercial successes like *Tetris* and *SimCity* alongside indie and freeware titles like *Dwarf Fortress* and *Passage*. The MoMA has both fine art and design collections, however, Paola Antonelli, the curator of the selection, was clear that they were collecting the games as design objects. On display, most of these games are presented with only a screen and the minimum required control interface. This is opposed to the collection and display strategy of The Museum of the Moving Image, which conserved and presented the cabinets as if they were also part of the videogame, displaying them in a way that maintained some of the original arcade context. While Antonelli says this decision intended to isolate design elements and avoid "arcade nostalgia," it can neglect important aesthetic and historical components of the games (Antonelli, 2013).

Smaller exhibitions have used their narrower scope to explore more specific themes. For example, in 2013, *XYZ: Alternative*

Voices in Game Design presented a selection of games that challenged not only the presumed demographics of game players and creators, but also the aesthetic and conceptual potential of videogames. Recently, in 2016, *The Game Worlds of Jason Rohrer* was billed as the first monographic retrospective of a single game maker (The Davis Museum at Wellesley College, 2016). Whether or not this is technically true, considering new media artists who worked primarily in games and software during the 1990s and 2000s, such as Jodi and Natalie Bookchin, it demonstrates a further integration of games made outside of an art context into the art world and its styles of exhibition.

CASE STUDY: *THE BLANK ARCADE 2016*

The 2016 edition of *The Blank Arcade* exhibition was initially planned as an event associated with the First Joint DiGRA/FDG conference in Dundee, Scotland. Because of its proximity to the event venue, as well as the gallery staff's experience with new media art objects and the resources to display them, the Hannah Maclure Centre gallery at the host institution, Abertay University, was identified as the best venue for the exhibition. The convenience and resources afforded by the location led to the decision that *The Blank Arcade's* usual duration should be extended to last almost three months, from August 2nd, 2016, to October 27th, 2016. *The Blank Arcade 2016* would also have an opening event targeted at delegates of the conference, and a subsequent event for students and the public.The longer exhibition period and increased accessibility to the public offered an opportunity to collect information on how many types of visitors respond to exhibitions of experimental and unusual videogames.

Early meetings determined that the goals of *The Blank Arcade 2016* would be to curate a selection that would continue the tradition of presenting videogames, and other forms of playful experience that offer experimental perspectives on the purpose and potential of play. Accessibility was a primary concern due

to the increased public access to the show, but the games' appropriateness for a different display context was also important. Adjustments to what type of works could be accepted as well as how many had to adapt the exhibition to the expectations and limitations of a space that was more like a traditional contemporary art gallery. Both curators were committed to presenting experimental works, but they would have to be durable and non-ephemeral enough to withstand being displayed five days a week for three months, and also able to be transported to and fit in the top floor gallery space of a university building, rather than a conference venue or other multipurpose space. Selection Process

Conscious of the above issues, the curators drafted a submission form and made it available online. We distributed it via mailing lists and social media, extending the invitation to submit to independent game developers, games-related academics, and new media artists. During the six weeks the call was open, we received a response of 57 different submissions from a variety of individual artists, studios, collectives and development teams based across the UK, Europe, Asia and North America.

After submissions closed, Lindsay Grace and I prepared to co-curate the submissions. We ranked the projects separately before meeting via Skype to discuss the works we agreed were suitable, and decide on the content as well as general theme of the show. While evaluating the selections, some had to be declined immediately due to lack of quality, non-functionality, or insufficient relevance to the prompt. Other works were conceptually original and of sufficient quality, but required too much space, or more advanced technology and upkeep, which the HMC could not afford to provide for the three months of the exhibition.

From works that were not disqualified for these issues, I curated two ideal but different selections; one of a show that featured games that responded to current events, and another that focused on games that appealed to the senses in unusual ways, through

alternative graphics styles, tactile interfaces, sound engineering and so on. These were two categories that there was a lot of interest in, because many submissions tended to fit in one of these categories, and they also matched themes of major indie arcades and other showcases, such as Alt. Ctrl. at GDC, and Games For Change. The limitation of only selecting from the pool of submissions (a common approach for many "arcade" type exhibitions) made it difficult to select a more specific theme, but there was still a desire that some unifying thread group the selected games together. In hindsight, using only this approach may be worth reconsidering in future iterations if a stronger theme is desired. In this case, the theme of "senses" is defined as excellent submissions which deviate from ways that mainstream videogames create sensory experiences, and the theme of "current events" is defined as excellent submissions which deviate from the escapism associated with mainstream games by addressing real-world events and issues.

As co-curators, we overlapped more on our positive opinions of the "senses" category of games. Many of the politically themed games were from an English-speaking and specifically American perspective, and some relied on outside knowledge related to past or current events. Overall, the works fitting the theme of the senses were more accessible. The games we both felt most positively about, and felt fit this general theme, were narrowed down to nine, which led to the eventual eight selections featured in the show.

The final selections were *Abstract Playground AP1* by Will Hurt, *Beeswing* by Jack King-Spooner, *eBee* by the collective Pins and Needles, *Fugl* by Johan Gjestland and Team Fugl, *Katakata* by Kirsty Keatch, *Lissitzky's Revenge* by Christopher Totten, *Orchids to Dusk* by Pol Clarissou, *You Must Be 18 or Older to Enter* by Seemingly Pointless, and *Walden* by Tracy Fullerton, though *Walden* was found to be beyond the means of the exhibition, requiring a graphics and video card the HMC could not supply.

Due to limitations of space and budget, as well as the desire to create a tightly curated show, the 2016 edition of The Blank Arcade ended up being the most selective iteration. This selection draws from the history of videogame exhibitions, and challenges it by including works by teams and single creators, works of vastly different scales and media, and works from creators that described themselves as artists, designers, and game developers alike. This was done partly to bridge the gap between the parallel histories of independent and new media art game development, which rarely interact in the history of game exhibitions, in the hopes of creating fruitful and provoking juxtapositions between works that feel more like "art" and "games," or works made by teams and a single artist.

Deliberately, most of the games in the exhibition were intuitively accessible, or at most could be figured out through a brief period of experimentation. *Fugl* and *Lissitzky's Revenge* were the videogames in the exhibition that demanded the most traditional gaming skill with controls, but they also allowed the player to restart and change their approach quickly in the case of failure, so that it was not a major discouragement or setback. This is not to say that all gallery games must be simple. A difficult control scheme that draws from tacitly accepted "gamer" culture norms can even be used strategically to add to the themes of a piece and its aesthetic experience. Eddo Stern's *Vietnam Romance*, for example, was displayed concurrently in the Dundee Contemporary Arts center as a part of a different exhibition, and has a complex control scheme with a high learning curve, even for experienced mainstream videogame players. However, it was also situated in a larger gallery space and had a robust attract mode that could communicate the content of the game to people intimidated by the control scheme. Gauging the appropriateness of including difficult or unintuitive games requires a case-by-case judgement, and considering the other games in the exhibition, the flow of visitors through the space, as well as the likely audience, are important aspects of this curatorial process.

Exhibition Installation

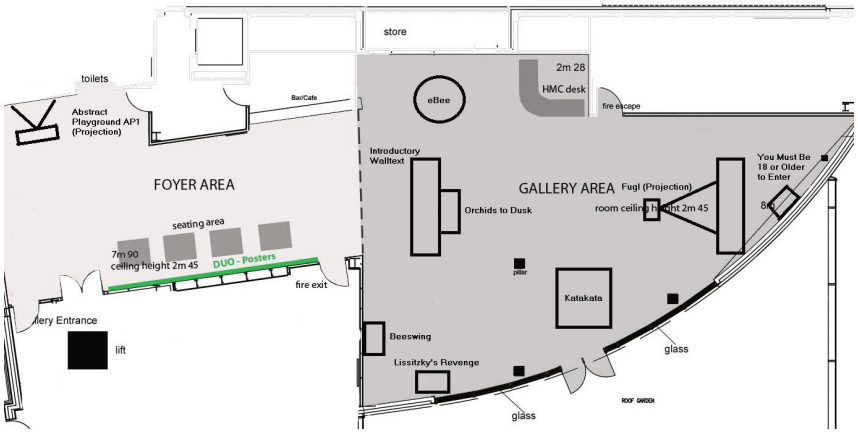


Figure 1: Floorplan for The Blank Arcade 2016installed at the Hannah Maclure Centre in Dundee.

Within the gallery space, two mobile partitions were used to mount the introductory wall text and direct flow through the space, and also to create a slight barrier between the general exhibition space and *You Must Be 18 or Older to Enter*. For this work, some specialized furniture for setting a scene similar to the one implied in the game was acquired. For cohesion, both with the HMC's other exhibitions as well as between the works on display, I exhibited the rest of the works on either standard desks or plinths provided by the gallery, projected, or freestanding in the case of *Katakata*. Lindsay Grace and I also prepared texts for wall labels as well as the catalogue to offer background information, interpretation and an explication of the exhibition's theme for visitors.

The Hannah Maclure Center frequently put on new media related exhibitions and had a rather typical medium-sized gallery space for them. Generally, the walls are white, and the works are either placed on pedestals, hung on the wall, or freestanding sculptural works. While the gallery itself is not strictly rectangular, with a long, curved wall, the aesthetic and hanging style coincides with what Brian O'Doherty refers to as the "white cube," a display paradigm that emerged in the mid-20th century and that still

dominates many art institutional spaces. These spaces are characteristically painted white or a similarly non-distracting, solid color, with minimal seating, decoration and uniform lighting. These design choices intend to encourage an uninterrupted encounter between the art object and visitor, without anything significantly altering the appearance of the work or creating distractions. O'Doherty notes that "unshadowed, white, clean and artificial," this style of display presents works as timeless, and attempts to "subtract from the artwork all cues that interfere with the fact that it is art" (O'Doherty, 2000).

The Museum of Modern Art, New York, initiated this style of exhibition with Alfred Barr's exhibitions of Modern art that hung paintings on neutral colored, undecorated walls, evenly spaced and at eye level. A lack of immediate hierarchy on the walls and linear, sequential hanging style conveys that the museum is a neutral container for artists' ideas, and this hanging style has become so successful, and spread to other institutions, to the point it has become "invisible" (Staniszewski, 1999). However, this attitude can conceal many choices the museum or gallery made about how to show the work on display, as well as what was not to show. While MoMA classifies the videogame works within their collection as "design" rather than art, the display approaches they use for traditional artworks like the painting and sculpture has influenced their approach to displaying videogames, as Raiford Guins notes in an interview. He particularly draws attention to their portrait-painting like orientation on the wall, which makes it difficult for others to see the onscreen action when a visitor is at the controls, as well as their use of emulation and stripping down of control interfaces, which removes important elements of industrial design as well as the time period and context the game was made for (Ferranto, 2017). In the same way that the white cube environment presents works of art as static, timeless and removed from cultural context, adapting videogames to this display paradigm strips them of many of their historical and aesthetic details.

To avoid the shortcomings of this universalizing approach and experiment with alternatives, *The Blank Arcade* included some display styles that focused on the direct interaction experience, but also others that considered participation and spectatorship occurring simultaneously. Combining these approaches was an attempt to acknowledge the variety of personalities and experience levels visitors would be bringing to the exhibition, as well as to mesh with the overall theme of presenting a variety of unconventional ways games can engage with perception and the senses.

The videogames that were oriented most towards a one-to-one experience of interaction were *Beeswing* by Jack King-Spooner, *Lissitzky's Revenge* by Christopher Totten, and *Orchids to Dusk* by Pol Clarissou. Both *Beeswing* and *Lissitzky's Revenge* shared aesthetic themes in that they were games utilizing tactile media like cut paper, sculpture and drawing in the creation of their digital graphics. They were also both displayed on desktop monitors set on plinths with standard interfaces for control (an Xbox 360 controller in the case of *Lissitzky's Revenge* and a QWERTY keyboard for *Beeswing*) and a set of headphones. The eye-level monitors and headphones conveyed a focus on the unique sound and visuals that were a part of these works and made up their most important details. In this case, the one-to-one experience was intended to draw close attention to visual and audio details in a potentially crowded and noisy gallery environment.

Beeswing is a personal narrative game about revisiting the Scottish village that King-Spooner grew up in, and so pulled local topics into an international selection of games. All of *Beeswing's* graphics began as drawings, paintings or clay figures, which King-Spooner scanned or photographed, and animated digitally before putting them into the game. The game allows the player to take control of the King-Spooner's avatar within the world and explore locations in the village and nearby city at their leisure and in any order.

Personal photographs and video clips are included, in addition to the intimate subject matter. The fact that all game assets, writing, audio and programming were gathered or created and implemented by a single author gives *Beeswing* potentially a different reception as an art object within the gallery, as opposed to other projects that rely on abstract or digitally-generated imagery, or work credited to teams or collectives. *Beeswing,* being a videogame that reflected this working style, as well as emphasized a handmade feel were primary reasons why this work was selected as an example of how the aesthetic horizons of videogames are being expanded.

Lissitzky's Revenge has graphics that mimic the drawings and designs of the Suprematist painter, El Lissitzky. Christopher Totten is an independent game developer who is interested in facilitating meeting points between videogames and cultural institutions, such as galleries and museums. *Lissitzky's Revenge*, like *Beeswing*, expands the aesthetic horizons of mainstream games by referencing an art historical movement in all aspects of its design. Suprematism is significant in the history of art and design because it was a movement that explicitly attempted to shape not only the aesthetic taste of the people, but also their political consciousness through abstract imagery.

Lissitzky's Revenge utilizes motifs and principles of Suprematist design to question whether such abstract symbols can provide motivation and narrative to the player, and if the videogame player of the 21st century can be manipulated by the same principles developed by the Suprematism movement a century ago. This not only taps an unusual design inspiration and medium for the videogame's visuals, but also challenges dominant preconceptions of the game studies field, which often rhetorically separate the underlying code of a videogame and its "aesthetic trappings" (Niedenthal, 2009).

I set up Pol Clarissou's *Orchids to Dusk*, running on a PC at a desk with a single chair and headphones. This game is controlled with a typical keyboard and mouse setup. *Orchids to Dusk* is particularly

suited to gallery display because it has a set play-time that is the same or shorter for each player. The game follows an astronaut who crashes on an apparently depopulated planet. After pausing to examine the environment for a few moments, the option to remove one's helmet appears to the player. Unlike the fast-paced action in many mainstream games that has been associated with videogames as a whole, this game requires the player to play slowly and carefully to reveal all gameplay choices.

Orchids to Dusk also exists as a networked environment that records every play session experienced by players who download the game from Clarissou's Itch.io page. In the year since it was released, Clarissou noted on his Twitter account that some areas of the networked version have become heavily forested, as previous plays' effects on the gameplay environment shape how the next players explore (Clarissou, 2017). The iteration displayed at *The Blank Arcade* was not connected to this networked version, however, so the environment created was specific to those who visited Blank Arcade. Placing only one chair with the work made it the most explicitly one-to-one experience, but because of its brief set length and themes of isolation, it was also the most appropriate work for this display style. Additionally, the changing game environment offered an indirect way for visitors to interact with those who visit before or after them.

I installed the other five videogames in the gallery in ways that more explicitly considered spectatorship. Upon first entering the gallery, visitors were in front of Will Hurt's *Abstract Playground AP 1*. This work is made up of a projection that players interact with through a custom control panel of arcade buttons. Button presses trigger sounds and animations, changing the color scheme and configuration of the depicted structure, as well as the selection of sounds. It was considered a strong inclusion for the show for its distinct graphical style that references Brutalist architectural movements that appear in the skyline of Dundee. Will Hurt's project also involved collaboration with players who had learning and/or motor disabilities, and may not have been able to enjoy

the complex control schemes or speed and challenge of more mainstream videogames.

While few of the videogames on display in *The Blank Arcade* had traditional fail states, many still utilized more complex standard interfaces such as contemporary game console controllers or WASD-mouse style controls for PCs, which rely on pre-existing knowledge of videogames. Placing a work with an interface more firmly rooted in daily life at the beginning of the exhibition (visitors likely used similar push buttons in the elevator on their way to the gallery) established confidence in a broad swathe of visitors before leading them to more complex experiences. One visitor from the 45-65 age group noted that *Abstract Playground* was the only work they found "immediately accessible" and needed help from the gallery attendant with the others. *Abstract Playground*'s lack of explicit goals often caused players to treat it more as an instrument than a game, "performing" small improvisations before moving on.

I placed *eBee* near the entrance of the exhibition at a large round table with several chairs. *eBee* also does not utilize a typical technological interface. In terms of genre, it has more in common with tactile puzzles and table games, staging gameplay that can be either cooperative or competitive, guided by the universal laws of electronics. The rules of the game are literalized in that, to be successful, the players must place game pieces that represent a functioning electrical circuit, and because of the e-textile elements in the pieces, properly placed pieces will result in an actual circuit being created and an LED light turning on. *eBee* was created by the Pins and Needles collective, which is a group of students and faculty at Northeastern University with a multidisciplinary background interested in game design.

eBee also aspires to bring forward forgotten elements of the history of computing and social life that are neglected in mainstream videogames. The choice to use textile and quilting processes and motifs in the creation of a game about electronics references the

origins of early punch-card computing, which was used to control textile design through Jacquard looms, and also draws inspiration from female-oriented social spaces, like quilting bees. Because of the game's more complex yet flexible rule structure, and because it was up to visitors to enforce the rules, as it is not a digital game managed by a computer, laminated cards fully explaining the rules were provided in addition to the gallery text. Additionally, the rules could be applied to any number of players, making it a work that a social experience of multiple visitors could be built around, and creating less pressure for players to hand off the controls if they feel they are taking too long or playing poorly.

Figure 2 & 3: Abstract Playground AP1(top) and eBee(bottom) as installed at The Blank Arcade.

In the center of the exhibition space, visitors encountered an object that initially does not seem like any recognizable form of game at all. This large sculpture, made of a metal frame, wooden plinth, and a long Jacob's Ladder toy with a robotic servo motor and contact mic attached, is Kirsty Keatch's *Katakata*. A computer and Wi-Fi router within the plinth allows visitors with a smartphone to connect to the sculpture and control it. Once the user connects with their phone to *Katakata*, flipping the phone activates the motor at the top of the statue, turning the Jacob's ladder toy and processing the audio data that goes through the contact mic into an accompanying sound that plays through nearby speakers. Moving the phone from side to side allows the user to alter the frequency of the sound, speeding it up or slowing it down as it loops. For Keatch, *Katakata* originated in a dissatisfaction with sound design for mobile technology, where, despite the potential offered by the portability and features of smartphones, generally little effort is put in beyond basic sound effects and music in smartphone apps because many users play the games on mute, while in a

noisy area such as their commute. *Katakata* innovates on mobile phone related audio by using the ubiquity of mobile devices to control external sound. Only one user is able to play with it at a time, adding elements of spectatorship and performance to the often solitary world of mobile gaming. This made it an extremely relevant selection, but it also came with more risk and challenges than the other objects in the exhibition. It was the only piece with robotic moving parts, which sometimes had to be repaired or reset by Keatch herself or another expert. Therefore, *Katakata* experienced the most downtime in the exhibition.

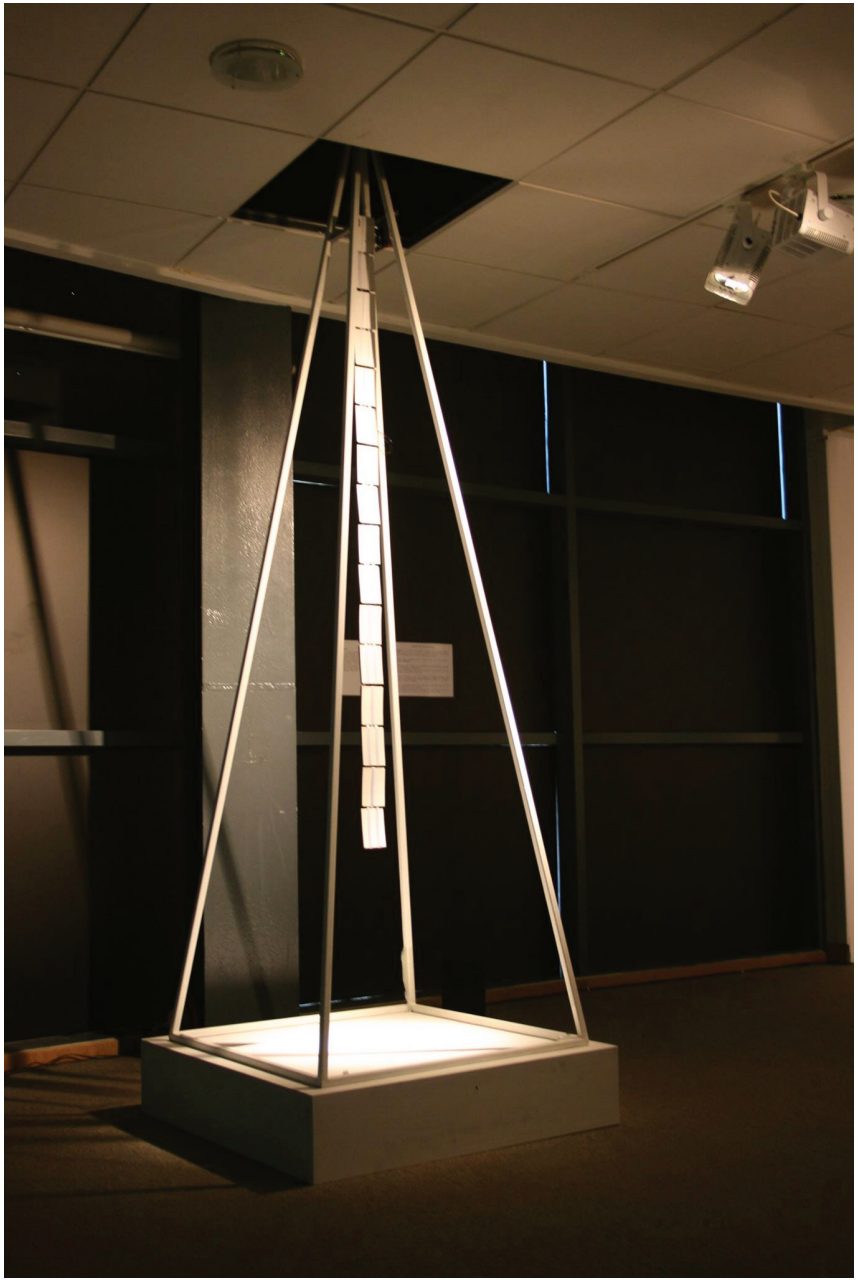


Figure 4 & 5: Katakata(top) and You Must Be 18 or Older to Enter(bottom) as installed at The Blank Arcade.

Beyond *Katakata* was a large, colorful projection that served as the visual focal point of the exhibition. I projected Johan Gjestland and Team Fugl's *Fugl* on the central movable wall form. *Fugl*, like *Lissitzky's Revenge*, can fit into an existing videogame genre, in this case the flight simulator. However, while mainstream flight sims typically involve piloting some sort of vessel, like an airplane or spaceship, and navigating to specific goals or engaging in combat, *Fugl* does not include any of these features. Instead, players control a bird. Rather than the controls approximating vehicular movements, they include flapping, perching, and riding gusts of wind. This decision was meant to create a flying simulator that was less about racing or combat and instead focused on the sensation of flight itself, and leaves the goals and motivation for play up to the player.The game is available on mobile platforms, using tactile touch and tilt controls, for the Virtual Reality headset Oculus Rift, and for basic desktop PCs. The PC version may seem most detached from the idea of sensation, as a mouse and keyboard or game controller controlling the action onscreen would be the

most abstracted form of engagement with the work, diminishing the sensation of flight for the player, considerably more so than it would with touch and tilt controls or the perspective of VR. However, we decided a VR headset would hamper flow through the exhibition and require more monitoring, space and resources than the gallery could provide, and similarly, using the mobile game would only accommodate one player at a time and risk being overlooked as the smallest screen in the gallery space. Running the game on a PC, but projecting it, was the best option. Because of the scale, all viewers, not just the player, could get a sense of the feeling of Roger Caillois' concept of *ilinx*, a type of play that relies on sensations of speed and being out of control due to the disruptions of perception that *Fugl* provokes (Caillois, 2001). I placed the final game in *The Blank Arcade* in a small room-like space created by the movable wall *Fugl* was projected onto within the gallery. Separating this game from the main area of the exhibition with this partition served multiple purposes. *You Must Be 18 or Older to Enter*, by collective, Seemingly Pointless, was the only game in the show to feature sexual content. The game is an interactive fiction piece primarily about being a child sneaking onto the family computer to look at online pornography for the first time. The use of ASCII art to represent pornographic elements puts a kind of screen between the viewer and what would typically be scandalous content, making the focus more on the narrative and atmosphere generated by the work. Despite this, some moments in the game could still be seen as inappropriate or uncomfortable, so the installation of the game was behind a partition and a content warning was included on the label. These display choices also ended up serving the content of the game and made this freely-available online PC game, which visitors could download from home, a unique gallery experience. The partition allowed us to simulate the scale and setup of the computer room mentioned in the game. Used furniture and knickknacks were acquired from the gallery's existing resources and local thrift shops under the supervision of myself and the artists. The light of a lamp also added a glow that extended beyond the partition, which *Fugl* was projected on, to increase visitor awareness that the exhibition

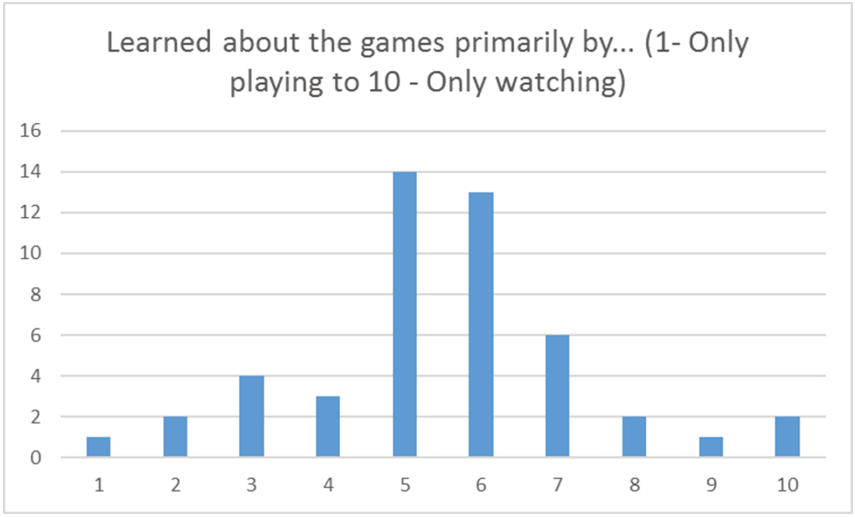
continued that way. The effect of creating the computer-room like setting within the gallery contributed to the exhibition's overall theme of games extending the aesthetic and sensorial potential of digital game design. The shape of the created room mimicked the implied setting of the game, and the layout of the room, with the visitors being able to see the computer screen over the current player's shoulder as they entered, referenced the anxiety within the game of the player character sneaking onto illicit websites and looking over their shoulder to ensure their parents aren't home. It created an atmosphere that was both intimate and nostalgic, as well as spectated, playing with ideas of comfort and performance as well as suggesting the typical setting where videogames are played.Visitor Feedback

I prepared paper surveys and made them available for visitors to answer basic demographic questions that are a traditional part of gauging the reach and influence of gallery shows. Because of the interactive element of the artworks, as well as their technological interfaces, which may seem daunting and unfamiliar to certain audiences, I also included questions about the perceived accessibility clarity, and functioning of the works to provide perspectives for future iterations of my curatorial practice.

Because these forms were voluntary for visitors to fill out, they do not represent nor were they intended to record an accurate number of attendees or precise demographic data. Instead, they were intended primarily to gain impressions of the variety of people who attended, and their response to the exhibition methods. Overall, 48 responses were collected, of which 19 respondents were female, one was non-binary, and 25 were male, with the remaining three opting out of sharing their gender identity. In terms of age, at least one response was collected from every category, but it predictably slanted to being dominated by the 16-22 age group, due to the gallery's proximity to Abertay University and the fact that professors were encouraged to promote the show to their game design students. 26 respondents were 16-22 years old, 15 were 23-30, five were 31-45, one was 46-64, and

one was over 65. Despite the scarcity, some of the surveys from older respondents offered interesting insights, as cited in the case of *Abstract Playground AP1*.

The next section allowed the visitor to select any number of available statements that were related to their reasons for attending the exhibition. Among the many options, 22 respondents noted an existing interest in videogames as a primary reason, and 19 indicated a pre-existing interest in new media or contemporary art generally, more in line with the program of the HMC, which does not regularly exhibit videogames. "Gamers" and mainstream gaming often tends to be at odds with so-called "art games" or use of gaming technology in new media art, so it is encouraging that the exhibition was advertised and presented in a way that appealed to both interests.



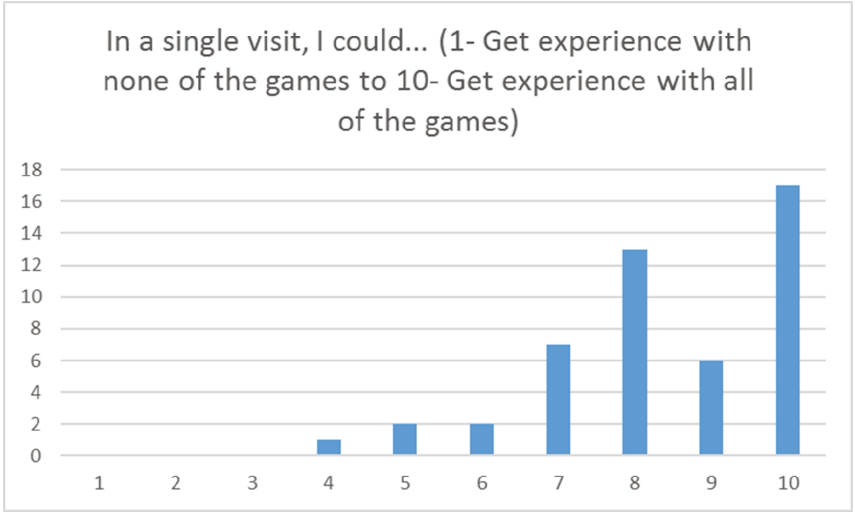


Figure 6 & 7: Distribution of answers for questions 4 (top) and 6 (bottom) from the visitor survey.

Other questions asked the visitor to rate their opinion or experience on a spectrum from 1 to 10. One of these questions asked visitors to rate how they primarily learned about the games; Only by Playing (1) or Only by Watching (10), with a clarifying note of Equally Playing, and Watching Others in the center. The mean value of these responses was 5.5, very close to the middle, with distribution across all the values. This response especially had interesting connotations for exhibitions of videogames, and was my main takeaway from this exhibition that I carried into future work and research. Academic discourse surrounding games has long prioritized the individual experience of the player, or the game as activated by player interaction as the primary object of game studies. Recent work considering spectated and cooperative play of so-called “single player” experiences, such as Let’s Plays, streaming, speedrunning, and so on, has begun to play a notable role in discussions, and this statistic is additional evidence of the importance of these considerations. Not only in recreational play of mainstream and commercial games does watching have a marked effect on how players receive games, but the same also appears to be true of videogames in a gallery context.

Visitors were also asked how many games they felt they could get sufficient experience with during a single visit to the gallery, rating from None of the Games (1) to All of the Games (10). The mean value of all the responses was 8.4. The distribution ranged from as low as four, implying slightly less than half the games, to the maximum of 10. A high number of games available to play has been a selling point for several past exhibitions, such as *Game On*. However, that a smaller exhibition of only eight games still overwhelmed some visitors in terms of being satisfied with the amount of time spent with each game confirms that tighter curation of selections may offer a deeper understanding of the games on display.

REFLECTION AND CONCLUSION

The Blank Arcade 2016 was both a continuation and expansion of an existing curatorial approach towards games. By staging it in a gallery location and for a longer period, as well as building an event program around it and collecting visitor feedback, we were able to gather insights into how a variety of visitors respond to experimental videogames in an exhibition context. While *The Blank Arcade 2016* did not contain any games that would be considered mainstream, it did cover a variety of approaches, with creators describing themselves as artists, designers and game developers all included. It was thematic rather than historical, with the aim to present new works that surrounded the topic of experimental play with the senses, and came from a variety of different production methods and aesthetic approaches. In the end, the goal of the exhibition, to present a set of unconventional approaches to digital games and play, and accessibly expose them to a broad audience of academics, students and the public, was achieved through the selections and display choices. Despite this, it is important to pay attention to additional issues that arose amid the exhibition's reception.

This case study has addressed certain issues evident in videogame exhibitions, primarily visitors' perceptions of the accessibility of experimental games, the challenge of creating experiences that build on games that are downloadable or free to play at home, and presenting works together that cross lines of genre, production method and form. As I progress with my interpretation of past videogame exhibitions, and curation of new ones, visitor feedback to *The Blank Arcade 2016* has emphasized the importance of not only examining the direct interaction with videogames on display in these analyses, but also considering those who, because of crowds, ability or just personal preference, end up understanding the exhibition through spectating gameplay.

While the history of videogame exhibitions in art institutions may take many different approaches in terms of how it organizes the form's history, what it includes, and how it presents interactive displays, most of these approaches are primarily oriented around a normative idea of a player, which does not reflect how many experience videogames. Game Studies perspectives have investigated and engaged with the ways that videogames are often not simply interacted with, but enable a whole spectrum of spectatorship, participation and collaboration behaviors. Samuel Tobin (2016) has written on the variety of lingering behaviors in video arcades that challenge their historical framing as primarily a place where gamers interacted directly with arcade games, and James Newman (2002) has also noted the roles of "non-controlling" players and how these roles complicate binaries of "player" and "spectator."

There has also been much recent attention to how gaming marathons and online streaming has brought spectatorship to the forefront in videogames. Like the eSports, Let's Play channels, and speedrun communities studied by Stephanie Boluk and Patrick Lemieux (2017), the gallery space is another context for videogames to become sites for performance and collaboration. While these behaviors aren't what is typically considered "interaction" with videogames, they are not a lesser form of

engagement, and can reveal their own forms of understanding and aesthetic appreciation of videogames.

The data collected from visitor surveys only offers impressions of what visitors subjectively reported on their experiences in the gallery, but still supports the importance of these emerging areas of scholarship that consider spectatorship. The finding that the majority of surveyed visitors reported both playing and watching the games to understand them, as well as scholarship that criticizes the binary separation of these two states, both in the gallery and in the context of videogame play, challenged the preconceptions I brought to *The Blank Arcade* and the installation style I used for the featured games.

In her study of the history of spectatorship and participation in art contexts, Claire Bishop notably does not examine any new media exhibitions. She considers interaction with technology different from participation because interaction is a one-to-one relationship, whereas participation involves multiple people (Bishop, 2012). This is similar to the view of interaction demonstrated by the MoMA and other exhibitions of videogames, which focus on a single, direct interactor. However, within the gallery videogames (or in the case of games that are only shown in galleries, such as work by new media artists, videogame technology and interfaces) are placed in an unfamiliar context, and use of them becomes somewhat self-conscious and performative. Along these lines, Beryl Graham notes that how interactive and technological works are exhibited often favor those that are already confident and experienced, and at worst can further alienate those who are less comfortable with a technological interface or not willing to "perform" in front of others, turning a democratizing gesture into one that instead only appeals to the typical audiences of videogames and technology (Dovey, 1996). Some major exhibitions, such as *The Art of Videogames*, presented their interactive videogames in a way that made their performance element explicit, with large projections into nooks that many could gather around while a player stood at the controls, but emphasis

on one-to-one interaction can still dominate both discussion of videogames and how they are exhibited.

Bishop's work complicates the contrasting of participation and spectatorship in the art world. While spectatorship is seen as an old and elitist form of engaging with artworks, which forces the viewer to concede to the expertise of the artist or institution, participatory exhibitions are seen as politically and socially engaging, allowing the visitor to take part in the institution, and even become empowered. However, like the binary of player and non-player, things are not so simple. Drawing on reality TV and social media as examples, she argues that participatory media are not necessarily empowering or enriching, and can entrench existing power relations just as static exhibition forms do. Further, she argues that a binary contrasting spectatorship as passive, and participation as active inherently maintains inequality, "either a disparagement of the spectator because he does nothing… or the converse claim that those who act are inferior to those who are able to look, contemplate ideas, and have a critical distance on the world" (Bishop, 2012). This usually maps to class divisions of the aestheticized; intellectual fine arts as high culture, and the popular and hands-on as low culture, or upper-class intellectual labor versus working-class manual labor; an issue it is especially important to be sensitive to when presenting a popular art form.

Engagement with spectatorship in *The Blank Arcade 2016* was mostly led by the experimental nature of the games included, but going forward I believe it is important for curators to consider how to engage with the presence of spectatorship in any exhibition of videogames. Instead of viewing accessibility in terms of an unrealistic ideal of every visitor engaging in one-to-one interaction with every game, it may be more appropriate to consider an exhibition as accessible if it facilitates the variety of ways people engage with videogames, without necessarily judging one as more legitimate.

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5.

Modeling and Designing for Key Elements of Curiosity

Risking Failure, Valuing Questions

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ABSTRACT

In this paper, we present a design model of curiosity that articulates the relationship between uncertainty and curiosity, and defines the role of failure and question-asking within that relationship. We explore ways to instantiate failure and question-asking within a cooperative tabletop game, share data from multiple playtests

both in the field and lab, and investigate the impact of design decisions on players' affective experiences of failure and their ability to use questions to close information gaps. In designing for *comfort with failure* we find that helping players manage the aversiveness of potential failure can help prevent it from stifling curiosity, and that affective responses to failure can be modified by aesthetic decisions, as well as by group norms. In designing for *comfort with questions* we find that empowering quieter players supports the entire group's efforts to express curiosity, flexibility in enforcing rules fosters curiosity, and questions can serve multiple simultaneous roles in supporting and expressing curiosity. We discuss how these findings can be used in other games to support curiosity in play.

Keywords

curiosity, uncertainty, game design, failure, question-asking;

INTRODUCTION

Fostering curiosity – a mindset that relishes uncertainty and motivates its reduction through inquiry and exploration – is a common goal in game design, but is nonetheless an undertaking that presents considerable challenges to designers. Whether player curiosity is viewed as a means of triggering and sustaining engagement during play, or as a transformational aim of game play itself (e.g. to trigger players' curiosity about a particular topic or context featured in the game), designers must contend with the fact that curiosity involves acknowledging gaps in one's own knowledge and taking steps, often without any guarantee of success, to reduce them (Loewenstein 1994). Thus, curiosity requires individuals to frame *uncertainty* and *the risk of failure* in a positive light, to be motivated and energized by unknowns, and to accept that one is bound to make mistakes in the pursuit of discovering new knowledge. A key factor in facilitating this positive framing, we argue, is an individual's affective (i.e.,

emotional) experience of uncertainty and failure. In the face of uncertainty, will individuals feel capable, well-equipped, and secure in their ability to reduce a gap in knowledge, or will the anxiety of the unknown, a lack of self-efficacy, or insufficient agency prevail?

Within a game, designers can construct contexts and situations that influence individuals' curiosity-relevant affective states. Games are rife with moments of uncertainty and failure and, if designed with an understanding of the role of player affect, can offer players a safe environment in which to experience these potentially aversive states as motivating rather than threatening (Gee 2003). For example, most games are repeatable experiences, giving players the opportunity to learn from and correct previous mistakes – and to view past or present failures as challenges, not threats. Presenting players with the *right* amount of safety to confront uncertainty and failure, however, requires a delicate balance – if repeatability completely removes uncertainty and the potential for failure, then curiosity itself is thwarted. Thus, shifting the safety balance too far in one direction can result in either disinterest if excessive familiarity or predictability breeds habituation and boredom, or disengagement if excessive uncertainty or unmitigable randomness becomes overwhelming rather than energizing.

At the same time, curiosity-focused design requires more than simply igniting and sustaining the motivation to inquire and explore – it also means providing the support and the tools to do so effectively. We focus here on *questions* as a specific tool that can enable players to express and potentially satisfy their curiosity. By asking questions, game players can confirm knowledge gaps, voice their uncertainty (thereby creating social norms of uncertainty in multiplayer settings), and ultimately reduce uncertainty through developing and deploying "good" questions.

In this paper, we aim to articulate the complex relationships between curiosity, uncertainty, failure, and questions through a

design model of curiosity. We demonstrate this design model by describing the design work on our curiosity tabletop game, *Outbreak*. *Outbreak* is an asymmetric, cooperative board game for two to five players. Together, players must explore a rogue scientist's laboratory to find the antidote to a dangerous disease. One player takes the role of a robot, who can explore dangerous spaces within the laboratory. The rest of the players, in their role as scientific investigators, must question the robot to discover what challenges stand between them and the antidote, collaboratively develop hypotheses about overcoming those challenges, and manage limited resources in executing their plans.

In *Outbreak*, we operationalize curiosity through two specific curiosity elements: (1) *comfort with uncertainty,* which relates to players' perceptions of failure, their comfort and willingness to take risks, and their search for unanswered questions, and (2) *comfort with questions,* which relates to players' perceived abilities to fill a knowledge gap and cope with uncertainty, their persistence towards understanding, and their assessment of their own knowledge states. We detail a three-month period of playtesting in both lab and field settings, discerning player responses to these curiosity goals through both observational and self-report measures deployed during these sessions. In our analysis of this data, we centered on two key themes: (1) shifting players' orientation toward failure as a challenge rather than a threat, and (2) developing effective question formulation skills in curiosity-driven exploration. We then link these emotional and behavioral outcomes to specific design decisions and game mechanics related to curiosity, and detail our iterative game design process. We close by presenting a set of implications and general considerations for curiosity-oriented design.

LITERATURE REVIEW

Our survey of the literature on curiosity provided insights about the affective and behavioral experiences of and responses to

curiosity, in particular the emotional consequences of uncertainty and the risk of failure and the key mediating role played by exploratory responses, such as question-asking, in managing those emotional consequences. These insights directly informed the development of a working design model of curiosity, and, as we foreshadow in each of the following subsections, produced concrete game design goals that directed the development of *Outbreak*.

Curiosity and Uncertainty

Curiosity can be understood as an appetite for information, or the desire to fill an information gap (Loewenstein 1994). This gap, a violation of what is known or expected, can motivate a range of responses depending on the affective state that the newly salient uncertainty triggers. Among the factors that affect whether this discomfort is felt as a curiosity "itch" rather than an aversive "irritant," an individual must see themselves as able to close that information gap and resolve the uncertainty (Proulx & Inzlicht 2012). If the gap in knowledge is too wide to be perceived as surmountable – for example, if a student believes they are not capable of learning a new subject – it can result in frustration, disengagement, or trivialization (Proulx & Inzlicht 2012). If the gap is too narrow – as in the case of a student who gets the answers to the test ahead of time – it can inspire indifference, as the gap is not seen as challenging, surprising, or compelling enough to merit further investigation (Engel 2013).

In designing for curiosity, we need to create compelling information gaps that game players can become aware of and feel challenged by, but that they also feel capable of resolving. Presenting players with elements or experiences of uncertainty is a key component of existing models of game engagement (Costikyan 2013), and our own work has begun to further elucidate the links between curiosity and uncertainty from a game design perspective (To et al. 2016a). At the same time, if uncertainty becomes unmanageable or uninteresting to players, it has the

potential to disrupt the experience of flow by creating an imbalance between perceived challenges and perceived skills (Csikszentmihalyi 2014). As game designers, we can seek to create games that encourage an instance-specific curiosity known as state curiosity (Carlin 1999). In addition to presenting moments of uncertainty to players, ensuring that the uncertainty presents the appropriate level of challenge, and equipping them with the skills to navigate and resolve that uncertainty, supporting uncertainty means triggering positive affect. Challenge is known to be one of the core pleasures of gameplay (Hunicke et al. 2004). In moments when players have both the ability and the desire to answer questions, a "virtuous cycle" of curiosity can therefore occur, in which players cyclically uncover information gaps, become immersed in the search for answers, and become more deeply engaged in the play experience (Engel 2013; Jirout & Khlar 2012). That is the primary focus of this paper. As discussed in more detail below, the design of *Outbreak* specifically aimed to provide social and instrumental support for confronting and overcoming uncertainty -– for example, by making the confrontation of uncertainty a shared, collective experience, and equipping players with resources to scaffold the question-asking process. Of course, game design may also aim to have a lasting impact on player's trait-level curiosity (i.e., their individual preferences for uncertainty). While the concepts discussed here may be extended towards long-term changes in trait curiosity, this is beyond the scope of the present work.

Curiosity and the Risk of Failure

Designing for curiosity means supporting positive affective experiences in the face of uncertainty, particularly when risking failure. However, positive affect is by no means a given when it comes to confronting uncertainty. Acknowledging a lack of information or a gap in knowledge can be an aversive state. Leading theories of curiosity posit that self-efficacy, the perceived ability to fill an information gap, plays a key role in determining whether uncertainty triggers affective states that are more positive

or negative (Loewenstein 1994). If the level of uncertainty is too high, if the information gap is not obvious, or players do not perceive themselves as being capable of surmounting the challenge, curiosity may be stifled by the threat of failure (Berlyne 1966; Litman & Jimerson 2004; Loewenstein 1994; Proulx & Inzlicht 2012; Engel 2013; Rinkevich 2014). In contrast, when individuals experience the risk of failure as energizing, knowledge gaps can be framed and experienced as a challenge to overcome (Litman & Jimerson 2004; Loewenstein 1994; Berlyne 1966). Finally, in group settings, attitudes toward failure are often socially constructed – groups develop norms about expressing uncertainty and enforce social consequences for disclosing ignorance (Feldman 1984). These norms affect how much a person is willing to disclose their own knowledge, or lack thereof, to the group.

In games, the affective and social consequences of failure may be reduced compared to non-game contexts. Klopfer, Osterweil, and Salen (2009) identified failure as one of the five "freedoms" of play -– while we cannot truly "fail" at play, we can do things during play that look like failure in other contexts, but with lower risk and a more explicit opportunity for learning and growth. Similarly, Gee (2003) writes that in games, the risk of failure is lowered and, in fact, that failure is a good thing -– players can feel empowered to take more risks, get feedback when they fail, explore more, and ultimately learn from the experience. Juul (2013) argues that failure may be the central aesthetic experience of play. By confronting players with their limitations, games can provide players the opportunity to emerge victorious over their past failures. According to Juul's analysis, becoming a better player means becoming a better fail-er. In short, games are already suited to pose potential failures as learning opportunities. However, game designers must still take into account players' varying emotional relationships with failure, and imbue their games with safeguards to help players maintain a positive affective state (i.e., one that is motivated and energized rather than discouraged or disinterested). Below, we detail how we identified such safeguards in the iterative design of *Outbreak*, including

the reduction of game elements that heightened players' anxiety about the consequences of failure (such as the potential loss of a character) and the importance of replayability in helping players realize opportunities to learn from and rectify their previous failures.

Curiosity and Questions

One safeguard against disengagement is the provision of tools that allow players to mitigate uncertainty and build self-efficacy around their ability to close information gaps (Proulx & Inzlicht 2012). The tool that we focus on here is the use of *questions*. When players encounter uncertainty, they can ask questions in order to express their curiosity, and they can use the information they receive to resolve information gaps. Questions are particularly useful for games utilizing hidden information or unsolved puzzles to build uncertainty (Costikyan 2013). Players can pose inquiries (e.g., to the game itself, to one another in social deception games, etc.) to reduce the information gap. Furthermore, in collaborative games like *Outbreak*, in which players have unique resources, questions may also aid in collective knowledge assessment. When players discover new information through their questions, question-asking can invoke the pleasures of discovery and exploration (Hunicke et al. 2004). Even the feeling of anticipation as the player waits to see what they will discover can be a source of pleasure in gameplay (Schell 2014).

While questions are a valuable tool for reducing uncertainty, and guiding players toward greater comfort, asking questions can be challenging. People's relationship with questions influences their likelihood to entertain, and willingness to voice those questions when facing uncertainty. First, individual personality factors such as assertiveness, self-esteem, and social anxiety determine one's general likelihood of asking questions (Mahdikhani et al. 2015). Second, social and situational cues indicate the cultural norms of question-asking in a given environment (Rocca 2010). For example, voicing uncertainty through question-asking can pose a

social risk, but can also serve as a valuable means of assessing the relative or collective knowledge of the group (Mohammed & Dumville 2001).Finally, a person's perception of an authority figure can alter their relationship with questions. In the classroom, students' perceptions of a teacher as supportive versus condescending can dramatically alter their likelihood of asking questions (Mahdikhani et al. 2015). In game contexts, this might include player relationships with a gamemaster or with fellow players who have more information. In addition to comfort asking questions, we acknowledge that the content of those questions is of great importance, but falls beyond the scope of this work. While developing better question formulation skills can increase the odds of getting information that reduces information gaps, good questions can also reveal new gaps through the knowledge they yield.

BUILDING A DESIGN MODEL OF CURIOSITY

When creating games, game designers have limited control over player experience. They can produce rules, game systems, resources, narrative elements, and audio-visual assets. However, they cannot directly control player experience, and have limited control over player behavior. Game design theories, such as the MDA model (Hunicke et al. 2004), acknowledge this limitation. Designers can create systems of game mechanics, but they must predict both the dynamic behaviors that emerge from those mechanics when players interact with them, and the aesthetic experiences that players will have as a result. This model suggests a design challenge in creating games for curiosity. Curiosity is a player experience that can be *provoked* by game elements and *expressed* during play, but not directly manipulated by game designers. Creating games for curiosity therefore means developing a design model of the relationship between curiosity and uncertainty, and exploring how that relationship is mediated by specific elements that can be instantiated in gameplay.

Building on the literature reviewed above, we understand curiosity and uncertainty as existing in a dynamic system (Thelen & Smith 1996) with their interaction mediated by players' comfort with the risk of failure, as well as their comfort and proficiency with questions. Figure 1 illustrates the working model of the cyclical interrelationships between these elements that guided the present work.

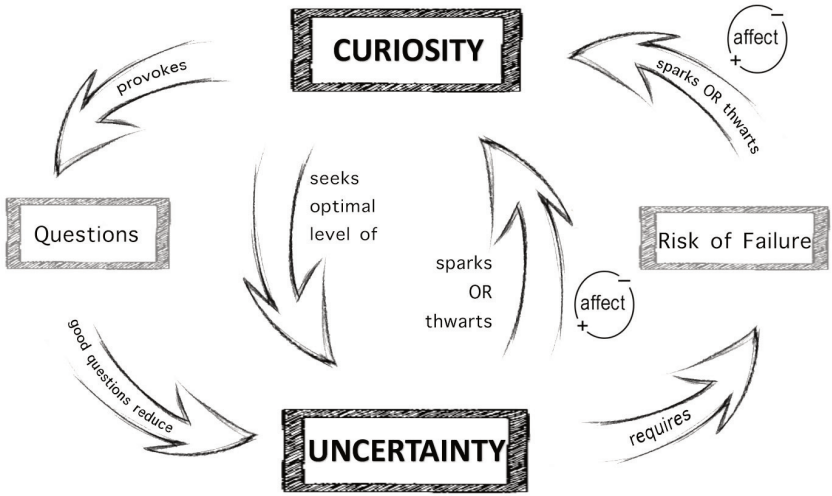

Figure 1:Uncertainty and curiosity have a cyclical relationship that is mediated by the risk of failure as well as by questions.

This model proposes that in order to spark and sustain players' curiosity and increase engagement and exploration, designers should strive to:

1. Present players with a level of uncertainty that is "optimal" – that is, a level that is experienced as challenging rather than overwhelming
2. Provide players with opportunities, in facing uncertainty, to fail in their attempts to reduce information gaps, and to perceive failures as energizing rather than threatening
3. Equip players with the ability to ask questions, and to

increase their proficiency with question-asking, in the pursuit of resolving uncertainty

In this way, the right-hand side of the model can be thought of as a "growth" cycle between curiosity, uncertainty, and failure. If curiosity is triggered by a manageable level of uncertainty, and players construe failure as a challenge, both uncertainty and failure are more likely to elicit positive affective responses and spark higher levels of curiosity. The left-hand side of the model represents a "reduction" cycle between curiosity, uncertainty, and questions. Curiosity motivates inquiry, and good questions ideally (but not inevitably) reduce levels of uncertainty. In both of these cycles, designers must help ensure player comfort (e.g., comfort with the expression of uncertainty, the possibility of failure, and the process of formulating and posing questions) to sustain engagement and, at the same time, prevent player complacency (e.g., by helping players to manage but not fully remove the risk of failure, and reduce but not fully resolve uncertainty).

This model provided us with a set of guidelines and goals for our design of the game *Outbreak*: creating an overall level of uncertainty that would be experienced as challenging rather than overwhelming, helping players experience failure as energizing, and increase player proficiency with question-asking. The following sections describe how the iterative design and testing of the game were informed by this model, and reveal the design lessons and implications that emerged in the process.

GAME DESIGN AND DEVELOPMENT

The "Sensing Curiosity in Play and Responding" (SCIPR) project aims to design and study game-based interventions for encouraging curiosity through play, particularly for marginalized students who may benefit from increased comfort with curiosity (e.g., female science students, racial minorities). These games are targeted toward middle school (9-14 year old) students. As a part

of the SCIPR project, we have iteratively designed and prototyped several games. This paper focuses on one of those games, *Outbreak* (Figure 2). We use tandem transformational game design, which emphasizes iterating game designs alongside theoretical understanding of transformational goals – in our case, our design model of curiosity (To et al. 2016b).

Outbreak is a cooperative question-asking game for two to five players, in which the group must save a town from a rogue scientist by searching their laboratory for antidotes to a disease. Most players assume the role of scientific investigators, while one player takes the role of their robot assistant. Each investigator player receives a set of resource cards (e.g. characters or pieces of equipment) that include different skills (Figure 2D), such as strength, computer hacking, and friendliness (Figure 2C). Each time they enter a new room in the mad scientist's lair, the robot player can enter first and safely investigate the room. However, the robot cannot describe what they see. They can only respond to questions put forward in the *question-asking phase* by the investigator players, who then select the resource cards that will neutralize the threats inside and unlock the antidotes for that room.

On a given round, the robot player reads the back of a room card, which includes a description of the room and lists the skills needed to survive (Figure 2A). Because the robot player portrays a "sensing" robot, they cannot read aloud the card description. They can only answer questions posed by the other players. Investigator players have limited time during the question-asking phase to ask questions, following which they enter the *discussion phase* where they collaboratively either choose which cards to risk in that room or they can choose to pass the room. If they choose a successful combination of cards, they keep their cards and roll to receive antidote tokens. If they fail, they must discard their cards. If they choose to pass on the room, they keep their cards, but the countdown to the end of the game continues.

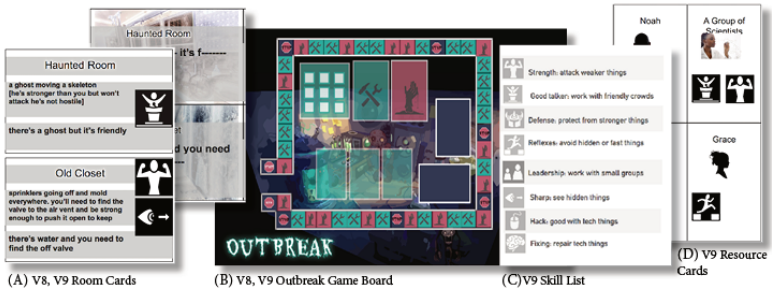

Figure 2:Outbreak game with components from V9 including (A) room cards, (B) the game board, (C) the list of skills, and (D) resource cards.

Outbreak, to date, has gone through 12 iterations. In this paper we discuss versions five, eight, and nine (V5, V8, V9) of *Outbreak*, all of which were studied with players from our target demographic, and which reflect major shifts in both our playtesting and design. Between V5 and V8, we moved from playtesting in the lab to playtesting in the field, and adjusted affective elements of the game; between V8 and V9, we changed the question-asking system and added new data collection measures. We discuss these choices further in the next section of this paper.

METHODS

This paper reports on the iterative design and playtesting process for *Outbreak*. Over the span of four months we playtested V5, V8, and V9 with participants in our target age demographic, 9-14 years old. Other versions of the game were playtested with players

outside our target audience (e.g. for game balance) and are not reported in this analysis. We conducted two playtests of V5 in a controlled lab setting, referred to as the lab playtests ("Lab"). We conducted ten field playtests with versions eight (V8) and nine (V9) at two local summer programs in Pittsburgh, PA, referred to as the field playtests. Site one was a local science center ("SC"), and site two was a YMCA in a primarily black, low-SES neighborhood ("YMCA"). See Table 1 for playtest details and codes.

Our playtesting process included 1) development of tools to measure players' responses, 2) deployment of those measures, and 3) analyzing their responses. We focused our analysis on understanding players' affective responses, particularly around uncertainty and failure, and on their ability to ask questions.

Group ID	Site	Game Version	Group ID	Site	Game Version
L1, L2	Lab	V5	Y2a, Y2b	YMCA	V9
Y1a, Y1b	YMCA	V8	Y3a, Y3b	YMCA	V9
S1a, S1b	SC	V8	S3a, S3b	SC	V9

Table 1. Group IDs for theOutbreak playtest groups. Each ID represents a single group of 3-4 players. With the exception of the lab studies, groups with the same number were played on the same date.

Measure Development

In addition to regular playtesting practices (e.g., observing player behavior, and focus group interviews about player experience) we set out to measure player experiences related to *Outbreak*'s transformational goals. We adapted best-practice methods from related fields when a validated measure did not yet exist, and then iterated those measures based on usability observations in the field.

Measuring Affect

In lab playtests of V5 and field playtests of V8, we collected player affective data using the Feelings Wheel (Kelley 2016). The Feelings Wheel includes six core emotions in the center of the diagram, and expands each outward into more specific emotions for a total of 77 feelings (see Figure 3A). To adapt this measure to our audience, we removed the emotion "sexy" as it was deemed inappropriate and uninformative. By circling emotions, players could capture how they felt during the game even if they did not have the language to generate emotion words on their own.

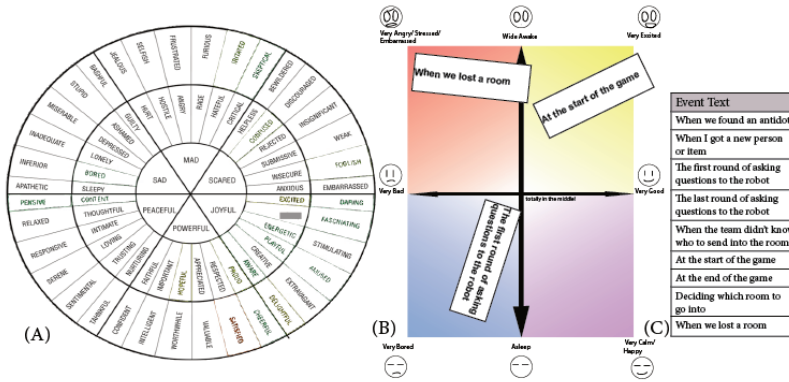

Figure 3:(A) The Feelings Wheel where participants circle distinct emotions felt (B) The valence-arousal map with sample event slips that participants place as a marker for emotions felt (C) List of game events used for Outbreak

For V9, we developed a version of a valence-arousal map for children's emotion self-report. Our goal was to connect player emotional reactions to specific elements of gameplay. To

accomplish this, we combined emotion valence mapping diagrams (Barrett 2004) and design-based post-it clustering activities (Hanington & Martin 2012). These cross-disciplinary tools both seek to capture and describe the user's self-reported spectrum of emotion with as much granularity and detail as possible. The map asks players to place prompts related to game moments (see Figure 3C) on a quadrant (see Figure 3B). The instrument was validated through multiple rounds of expert heuristic evaluation by cognitive psychologists and designers, and tested for usability in the field with children.

Game events were selected for their relationship to curiosity, uncertainty, failure, and question-asking. We coded each event for different types of curiosity (e.g., conceptual curiosity), different types of uncertainty (e.g., hidden information), game outcomes (e.g., failure/negative events), and when in the game we expected events to occur (e.g., early in the game).

Valence-arousal results were coded based on the x,y coordinate of the top left corner of each slip and the quadrant or quadrant boundary where it was placed. We also captured the relative horizontal and vertical placement on the graph in comparison to the other game events, using a ranking of 1-9. Slips that were placed on top of one another were given the same ranking.

Capturing Questions

We developed a field notes template for our playtest observations, both to standardize data capture across members of the research team and to ensure we captured relevant data. In our field playtests, we were unable to record video due to the limitations of the spaces available, in which children who had not consented to being videotaped were regularly present. We therefore manually captured the questions that investigators asked the robot player during the question-asking phase. Researchers were also directed to capture visible emotional responses to the game, unusual player behavior, and the gist of side conversations between players. When

possible, researchers noted the game outcome, whether players succeeded in a particular room, and other observations related to playability and balance.

We coded the questions based on their form and content. A codebook was developed through a bottom-up analytic process led by researchers who had not participated in the design of the game. For example, questions were coded "skill word" if players directly asked about a word from the skill sheet (e.g. "Is it strong?"), "discovery" if they asked about the existence or something in the room (e.g. "Are there any computers?"), and "building off" if they ask a question that builds on information received within the round (e.g. "Are there zombies?", "Are the zombies friendly?"). Questions could have multiple codes and every question was coded as "concrete" or "abstract". Questions coded as concrete were ones that cited specific concepts or seemed to represent a specific hypothesis (e.g. "Is there a zombie?", "Is it dark?"), whereas questions coded as abstract asked for non-specific information or closely referenced the skill words without a supporting hypothesis (e.g., "Is there a threat?", "Do I need to fix something?"). After the codebook was complete, two researchers independently coded the questions and discussed diverging codes until they reached agreement. Additionally, we captured the group and gameplay round associated with each question. In some cases, we were able to use this data to code whether questions were asked during rounds that succeeded or failed, and whether players had won or lost the prior round.

Playtesting and Measure Deployment

In all playtests, participants played *Outbreak* in groups of three to five, with a researcher taking the role of the robot player. In L1 and L2, players did not know each other before the playtest. To create familiarity between players, both groups were asked to participate in an icebreaker game (To et al. 2016c) before playing *Outbreak*. In the field playtests, which were conducted in the context of ongoing summer programs, players were typically familiar with

one another, so no icebreaker was used. Players were randomly assigned to groups, and playtests were scheduled as part of the regular activities of the program.

Participants were introduced to *Outbreak* as a cooperative board game currently in progress, and told that their early feedback would help the game designers improve the game. It was implied that designers were not present in the room in order to get as honest feedback as possible. Next, one researcher reviewed the rules with the players and played a scripted practice round that included a diverse set of sample questions. The same researcher adopted the role of the robot player for the remainder of the game. The researcher would answer questions about game mechanics if players explicitly asked or if they could not proceed with gameplay. Participants played until they won, lost, or 40 minutes had passed.

After gameplay, we collected emotion data. For the V5 and V8 playtests, each player was given a paper copy of the Feelings Wheel and asked to circle every emotion they had felt during play. The research team then collected the papers for analysis. For the V9 playtests, the researchers demonstrated how to place an event on the emotion map in a way that corresponded to a feeling. Participants were then given the nine event tokens and asked to place each token on a spot on the map that corresponded to their feelings at that point in the game. When participants indicated they were done placing tokens, the researchers photographed the map. If participants did not place any tokens, they were asked a second time if they wanted to complete the measure. If not, the researchers photographed an empty map.

After emotion data had been collected, players participated in a focus group interview. Participants were told that their feedback would be helpful in aiding the game designers to iterate the game and improve it. They were asked what they liked most about the game, what they would change, and any other feedback they'd like to share about the game.

During all phases of the playtest, an additional researcher, seated in the play space, took field notes using the notes template during play, captured feedback during the focus group interview, and made additional observational notes, as described in Measure Development measure development.

It is important to note that our data represents diverse playtests. Some participants played the game only once, while some played multiple times over several weeks; playtests occurred in a range of physical locations, from a formal lab setting to a cafeteria in a science center; and players played multiple versions. Given this diversity of data, it would be inappropriate to perform formal statistical analyses. Instead, we demonstrate that much can still be learned about curiosity and game design from diverse aggregate data.

DESIGNING FOR COMFORT WITH FAILURE

Exploring Comfort with Failure Through Design and Data

In order to explore the concept of comfort with failure, we first needed to operationalize failure within the design of *Outbreak*. Based on our rules design and observation of playtests, we identified three types of failure in the game. First, players could fail to find an antidote in a particular room, which we refer to as "room loss" (V5, V8, V9). Second, players could lose resources such as teammates (V5, V8) or gear (V5, V8, V9), which we refer to as "resource loss." Finally, players can lose the game, either by reaching the end of a countdown to midnight (V5) or by reaching the end of the game board (V8, V9) without finding enough antidotes, which we refer to as "game loss." Room and resource loss occur repeatedly throughout the game. However, game loss can occur only once and reflects players' overall performance.

During lab-based playtests of V5 (L1, L2) and V8 (Y1a, Y1b), we studied players' emotional and social reactions to the design

decisions we made around room loss, resource loss, and game loss. Because we did not want to interrupt players between rooms, these playtests relied primarily on observation to understand room and resource loss, which occurred during play. At the end of the game, we collected self-report data on player emotional experience, which reflected their overall experience in the game.

To connect the data more directly to specific types of failure, we collected observational and valence-arousal map data from four playtests of V9 across two separate sessions at the YMCA site. During the first session, we observed two games involving eight students (Y2a, Y2b). A week later, we observed two games involving ten students, seven of whom had participated in the previous session (Y3a, Y3b). All students had previously playtested different games designed by our group in prior sessions. However, because none of the students had played *Outbreak* prior to Y2, we were able to explore how uncertainty and failure were experienced, both as first-time players and on a repeated encounter with the game.

Patterns from the DataIn our earliest playtests of Outbreak with participants from the lab playtests, we observed that failure was a salient concept to the students. Individual player's emotional responses to the threat of failure such as observable anxiety behaviors (e.g., facial expressions, wincing) and vocalized fear over losing often spread to the group, and how the group responded to that – either by amplifying it or dissipating it often had a profound impact on a group norm around failure moving forward in the game.

Failure and Affect

We observed two factors that influenced players' affective relationship to failure. First, we observed that narrative and aesthetic elements had a much stronger effect on players' emotional reactions to failure than we expected. Second, we

observed that repeated play changed players' feelings about failure.

Early in the playtest process, we discovered that players felt attached to the resources in the game, and that they were often more willing to accept room loss (e.g. failure to collect antidotes) than resource loss. For example, in group L2, players asked questions such as, "Will we lose the scanner if we send it in?" Although the game's rules prohibit answering the question explicitly, the players decided that their scanner was at risk and chose not to send it into the room. Players correctly identified this decision as one that required weighing a guaranteed failure against the possibility of failure – only by chancing the loss of their scanner could they avoid the guaranteed loss of the room. We observed players experiencing anxiety around this decision, which could affect their willingness to take the risk.

To reduce the level of player anxiety about the risk of failure, we explored the role of narrative and aesthetic factors. Could we change the level of player anxiety using affective manipulations alone? Examining differences between player affective experiences in L1 and L2 suggested that we could. Players in group L1 were visibly distressed during play. Although they claimed in post-game interviews that they enjoyed the game, their Feelings Wheel data corroborated their distress. Of the 37 total emotions circled by four players, 24 were negative; 17 of those fell into the "scared" category, and all four players chose "anxious" to describe their feelings (Table 2). On the other hand, the four players in group L2 circled 49 total emotions, of which 44 were positive. All four players circled "aware" and "confident" to describe their experiences, and no negative emotion was circled by all four players. Our observations confirmed these differences. Players were concerned over the well-being of the game characters and their use of resources; they were sometimes anxious, but never visibly upset.

Group L1				Group L2			
Negative Emotions	**24**	**Positive Emotions**	**13**	**Negative Emotions**	**5**	**Positive Emotions**	**44**
Scared	17	Joyful	9	Scared	4	Joyful	19
Anxious 4 *Scared 3* ...				*Anxious 3* ...		*Aware 4* *Joyful 3* ...	
Sad	6	Powerful	4	Mad	1	Powerful	15
						Confident 4 *Faithful 3* ...	
Mad	1	Peaceful	0	Sad	0	Peaceful	10
						Peaceful 3 ...	

Table 2.Aggregate counts from the lab study groups (L1, L2) Feelings Wheel data. Counts for the two overall categories, positive and negative, are shown, as well as each of the six sub-categories. When three or more participants all circled the same emotion, that emotion is displayed with count data.

What could account for such an extreme difference between L1 and L2, given that the two sessions involved the same version of the game (V5)? During L1, we played a soundtrack of scary music in the background. Players repeatedly mentioned the music during gameplay, and they were visibly unnerved by it. The player response was sufficiently strong that we removed the music during L2 for the well-being of our players. Players in L2 still experienced anxiety, particularly when asked to weigh room loss against resource loss, as noted above. However, they appeared to be more resilient to this anxiety, focused less on the negative impacts of their failure, and had more positive feelings at the end of the game.

Another narrative element that affected players' willingness to take risks was the theming of resources. In earlier versions of the game (V5, V8), game resource cards included both scientific tools, such as a cloaking device or first aid kit, and scientist characters, such as Barbel the anxious ice researcher or Karolina the dependable virologist. Including scientist characters gave us the opportunity to introduce scientist role models who matched our target playtest groups, such as scientists who were female, black, Hispanic, or all three. At the same time, by making characters a collective resource, we hoped to create psychological distance between the players and the fate of their characters, who would serve to heighten the drama of the game. Unfortunately, this

psychological distancing did not succeed. We observed that the highest levels of anxiety were associated with negative outcomes for characters. The idea that player choice could result in characters going into a coma was too frightening for our audience. In V9 we removed characters as a separate resource type and saw a reduction in player stress; conversely, if the game were being redesigned for older students, reintroducing threats to scientist characters could increase the level of tension.

Over and above the impact of narrative and aesthetic game elements, we observed that repeated play changed players' affective reactions to in-game failure. As noted earlier, we were able to test the same version of the game (V9) across two different playtest sessions (Y2 and Y3). During these sessions, we collected valence-arousal map data about specific game events, including times when the players failed to complete a room ("When we lost a room" in Table 3). After the second session, players reported affective *dampening*, or a trend toward neutral valence in their emotional reactions, for all game events with one exception – the event involving failure (see Table 3). Players reported feeling more positive about failure events after their second play session, with a decrease in negatively-coded and neutral-coded emotions and a 26.7% increase in positive affect (see Table 3). In other words, playing *Outbreak* a second time reduced emotional responses (i.e., both the high negative and high positive valence) of most game events, but made failure a better experience.

	Positive			Neutral			Negative		
	Y2	Y3	Shift	Y2	Y3	Shift	Y2	Y3	Shift
When we found an antidote	0.714	0.7	(-)	0.143	0.3	(+)	0.143	0	(-)
When I got a new person or item	1	0.7	(-)	0	0.1	(+)	0	0.2	(+)
The first round of asking questions to the robot	0.857	0.6	(-)	0	0.3	(+)	0.143	0.1	(-)
The last round of asking questions to the robot	0.715	0.5	(-)	0.143	0.3	(+)	0.143	0.2	(+)
When the team didn't know who to send into the room	0.572	0.6	(-)	0.143	0.2	(+)	0.286	0.2	(-)
At the start of the game	0.857	0.5	(-)	0	0.3	(+)	0.143	0.2	(+)
At the end of the game	0.714	0.8	(+)	0	0.2	(+)	0.286	0	(-)
Deciding which room to go into	0.572	0.6	(+)	0.143	0.3	(+)	0.286	0.1	(-)
When we lost a room	0.333	0.6	(+)	0.167	0.1	(-)	0.501	0.3	(-)

Table 3. Proportion of game events eliciting positive, neutral, or negative (valence) responses on the valence-arousal map measure across two repeated play sessions (Y2 and Y3).

Our prior work in this area emphasized the role of *uncertainty*, as instantiated in game design decisions, in provoking and supporting curiosity (To et al. 2016a). However, this research suggests that *aesthetic* and *contextual* decisions can change players' affect and hence their willingness to take risks. The same game, deployed in different ways (with or without a scary soundtrack, played once or repeatedly), can produce different affective experiences of failure.

Social Factors

Theories of curiosity suggest that social norms about uncertainty and failure will affect people's experiences of curiosity and their likelihood of expressing curiosity. In our playtests, we were able to deploy our game in two different social settings with different social norms: a Science Center and a local YMCA. We observed that social differences between the groups affected how players engaged emotionally and socially with the game. SC players were highly concerned with failure in ways that paralleled the students in our lab studies L1 and L2. We observed anxiety when players were at risk of losing resources. However, these emotions shaped not only their play decisions, but also their social activity during question-asking and discussion. During the question-asking phase of the game, these students spent most of their time thinking silently, presumably about the "right" questions to ask. As a result, they asked very few questions and received little information. With the little information they had, they would debate back and forth endlessly during the discussion phase and would require light prompting to make a decision to move forward. Their concerns over failure were so immense that it prevented them from failing with grace, and from learning. By comparing these students to the players from the YMCA, we can see that this behavior is not purely driven by game design decisions. YMCA students were not overtly concerned about failure or losing resources, particularly by comparison to the SC and lab groups. They tended toward lightweight, short discussion rounds and rapid decision-making, and would forge ahead quickly through many rooms. While both of these behaviors, reflecting and experimenting, are valid

curiosity-relevant strategies, we ideally hope to foster both. Games designed for curiosity therefore require designs that are mindful of the social space they exist in. We want to design social spaces that can evoke the curiosity behavior that is most relevant to the goals of a particular curiosity game.

We note that even though social spaces can be designed to support different types of curiosity-relevant norms, differences in emotional response may be amplified by individual player factors. Because *Outbreak* is a cooperative game, players who are working together may experience "emotional contagion," or their emotional response being affected by the individual emotional response of other players (Barsade 2002). We observed this behavior in group L1, where one player had a particularly strong emotional response to the scary music. While all players found it unnerving, their response was amplified by seeing the fear displayed by this particular player.

Design Lessons

Helping players manage the aversiveness of potential failure can help prevent it from stifling curiosity. In *Outbreak*, we ask players to embrace risk and uncertainty in order to avoid certain failure. We observed that when players were particularly afraid of risk, they chose certain failure rather than the possibility of failure. Fear of failure also sometimes thwarted strategies to reduce the chances of failure, such as when students became so involved in asking the "right" question that they did not ask enough questions to gather information. Understanding that, in some circumstances, risk can be more intimidating than the certainty of failure can be used to help design for curiosity in other types of games.

Affective responses to failure can be modified by aesthetic game design decisions. We found that aesthetic design decisions, such as narrative and contextual factors had a strong impact on players' affective experience of failure. Scary music, named characters who were at risk, and first-time play all increased the anxiety level in

play. Conversely, table talk, generic items, and repeated play all made failure a more positive experience. Finding the right level of difficulty for a game is often conceptualized as requiring game-mechanical balance; our findings suggest that aesthetics can also be used to balance gameplay when it comes to the perceived risk of failure.

Group norms influence the affective experience of failure and the strategies available to manage it. Players' social norms and the setting in which they are playing affect how willing they are to tolerate failure, to take risks, and to express ignorance in front of a group. For example, our SC and YMCA groups had very different rates of asking questions, even when using the same set of rules. These social norms can be affected by emotion contagion, in which a single player's strong experiences spread to other players. In other types of multiplayer games, designing for players who have outsized or outlier emotions can be a productive way of shifting the norms of the group.

DESIGNING FOR QUESTIONS

Exploring Question-Asking Through Data and Design

To explore this topic, we relied on observational data, valence-arousal map data, and question data from playtests for three different versions of the game in our on-site playtest settings, as well as our lab setting.

In every version of the game, each round of gameplay involves the previously described *question-asking phase* where investigators ask questions of the robot player. The question-asking phase is always limited by a timer. Question-asking mechanics varied between versions in two ways. First, in V5 and V8 players could ask an unlimited number of questions during the question-asking phase. In V9 we introduced battery tokens, which constrained both the number and form of questions. Immediately before each question round, players drew three tokens from a bag. Each token

was a small rectangular battery with a question template (e.g., “How many _____?”, “____ need a ____ ____?”) (see Figure 4). In order to ask a question, players turn in a token to the robot player and ask a question matching the template. As discussed below, the robot player needed to use their judgment about how tightly to require the question to match the form. Second, we varied how rooms were displayed to invite curiosity. In V5, the rooms were displayed on a board in a map-style layout. In V8 and V9, the rooms were individual cards drawn from a deck. Cards featured a title and some clue words (e.g., the “Big Office” and “Full of broken ____ and a ____ ____”). (see Figure 2A).

Figure 4:Battery questions with question templates used in the question-asking phase of Outbreak (version nine)

We also use our coded question data to examine the effects of failure on players’ question development within a single gameplay session. Questions are coded as either occurring in the first round, or after a round in which they either failed or succeeded at overcoming a chosen room’s challenge. We use this information

to explore the relationship between prior failures or successes in the game and players' decisions to build on, revise, or discard their hypotheses.

Patterns from the Data

From observational data we see that players had highly varying relationships with questions, specifically regarding their level of comfort. In our early playtests with V5 and V8 in the lab and in the field, players were permitted to ask as many questions as possible within the given time limit. While some players took advantage of this and asked questions in a rapid-fire fashion, we saw some players that asked very few or no questions. These players instead seemed to be deep in thought or too nervous or uncomfortable to ask any questions aloud. In an attempt to ensure that every player had the opportunity and motivation to ask questions, in V9 and beyond we distributed battery tokens so that each player was allotted a particular number of questions they could ask. This limited the questions that the more comfortable students could ask and incentivized the less comfortable students to ask questions.

In V9 of the game, we also implemented the question templates. By asking players to fit their questions to the template, we hoped to support players who were overwhelmed by the task of coming up with a question, as well as diversify the questions being asked by players. During game play, we did not strictly enforce that players fit their questions to the template – partly so that students would not feel increased self-consciousness or discomfort with question-asking, and partly because it is logistically difficult for the robot player to check the templates while attempting to answer questions within the timed round. In our analysis of the question data, we examine how closely players matched the given templates when asking questions. In our analysis, only about half of the questions asked perfectly matched the template given. Twelve of the 159 questions across the six game plays used no discernable template at all (i.e., the questions could not be retrofit into any of the existing templates).

The battery tokens were randomly distributed on each round, but we recorded an uneven distribution of usage of the battery token templates across game plays. Of all of the 20 question templates, by far question template Q1, "Is there a _____ ?," was the most frequently used, with 25 uses over the four plays of V9. By comparison, the next most frequent template, Q4, "____ need ____ ____?," had 19 uses across those game plays. By contrast, Q20 "When ___ a ____ ____?", Q19 "_____ _____ the most _____?", Q7 "How much _____?", and Q6 "Does the room ____ _____?" all had two or fewer uses.

We observed an increase in the average number of questions asked from V8 with 24 questions per game to V9 with 33 questions per game. This may be taken as an indication that students' comfort with questions may have increased. However, we must also note that because these data come from repeated game play (albeit with different versions of the game), this pattern may simply have resulted from students' increased level of comfort and familiarity with the game as a whole.

Finally, we observed differences in question-asking behavior and question content when a question-asking round immediately followed a prior failed round versus a prior succeeded round. Removing all first rounds of question asking, we compared post-success and post-failure questions. In post-success rounds of question asking, questions coded as "building off" were three times more frequent than in post-failure rounds. Similarly, questions coded as "characteristic," where players ask about a feature of something they have previously discovered, were three times more likely in post-success rounds than in post-failure rounds. Finally, we observed that questions coded as "discovery" were twice as likely in post-failure rounds. These question-asking patterns indicate that when players succeed, they are more comfortable building specific hypotheses and learning more about these hypotheses. In post-failure rounds we see more exploratory behavior, with players prioritizing the pursuit of greater breadth rather than greater depth of information.

Design Lessons

Questions can serve multiple simultaneous roles in supporting and expressing curiosity. Questions are a common tool for reducing knowledge gaps, which is why we centered them as a mechanic for *Outbreak*. However, questions also carry with them implicit hypotheses about the gap the players perceive. Even when players cannot articulate their hypotheses explicitly, they voice them in their questions. Because questions are spoken publicly, they help the group perform collective knowledge assessment; players know what other players are uncertain about, and what they think is worth asking. Finally, because answers are also given publicly, questions help players *help each other* reduce information gaps, not just reduce them for themselves. Even in games where questions are not core to the mechanic, creating moments where question-asking is both encouraged and visibly rewarded can create safe social environments to express curiosity.

Empowering quieter players supports the entire group's efforts to express curiosity. Designs that enforce that all players participate support the entire group in expressing curiosity, without impairing the performance of individuals. As we saw in *Outbreak*, when we switched from a free-form question-asking phase to a structured one where each player was given battery tokens, we witnessed an increase in the average total number of questions the entire group asked. There was both an increase in fluency and better distribution of question-asking amongst players. In other games that require creative participation, enforced participation might temper the influence of an "alpha player" and help the entire group.

Flexibility in enforcing rules fosters curiosity. When players are trying to reduce a knowledge gap, they are sensitive to their ability to effectively use the tools available to them, including questions. Rejecting attempts to close the knowledge gap for violations of minor rules was counterproductive. As we observed in *Outbreak*, the question templates on battery tokens were used loosely. Players

typically asked questions that were a close, but not an exact, match. While the robot player rejected questions that had nothing to do with the proffered template, accepting the close-but-not-quite questions helped support player enthusiasm for and fluency with questions. By not formalizing the degree of acceptable deviance into rules, but rather leaving it up to the player's judgment, robot players can implicitly respond to group social norms.

CONCLUSION & FUTURE WORK

This paper explores how game design decisions influence two critical elements of curiosity: the affective experience of failure and question-asking as a method for closing information gaps. In this paper, we present a design model of curiosity that articulates the relationship between uncertainty and curiosity, and defines the role of failure and question-asking within that relationship. We explored ways to instantiate failure and question-asking within a cooperative board game, playtested repeatedly with players in our target demographic, and investigated the impact of game design decisions on their affective experiences of failure and their ability to use questions to close information gaps. We found that affect had a significant experience on players' in-game decisions around risk and failure, as well as on their willingness to express ignorance and take risks socially; players' affective experiences were in some ways more responsive to aesthetic, narrative, and contextual factors than to changes in mechanics. Conversely, changes in game mechanics changed how groups managed their question-asking process, and served to empower quieter players without silencing bolder ones – but flexibility in enforcing the rules and mechanics of the game was key. Designing for curiosity involves a balancing act; when designers can create motivating moments of uncertainty, give players opportunities to face that uncertainty, and equip them with the right tools to resolve that uncertainty they can create positive cycles not only of curiosity but of rich engagement with their games.

Our work to date has studied these questions through iterative design and playtesting with members of our target demographic, middle-school students with marginalized science identities. Our findings can now be used to design larger-scale studies, and to test whether our insights generalize to other audiences. One avenue of future research with *Outbreak* will be to study how the gameplay behaviors and outcomes we observed play out in groups of varying composition, allowing us to understand how factors such as the social and interpersonal dynamics of the group influence players' experiences. In future studies, we can also look at the moment-to-moment processes by which failure and question-asking are constructed in player groups to understand our findings more deeply. For example, the literature on questions indicates that the process of developing questions is as important as the questions themselves. Finally, we can study how our findings can be instantiated in other games, whether explicitly designed to support curiosity or not.

Considering the generalizability of these lessons to other game genres and platforms raises a number of intriguing questions for further consideration and future study. First, how might group processes related to failure, question-asking, and curiosity emerge differently in cooperative games versus competitive games? Second, to what extent is the physical co-location of players in tabletop multiplayer games necessary for producing the outcomes we observed with *Outbreak* (e.g., how critical is the role of nonverbal responses such as facial expression)? Finally, comparing multiplayer to solo game experiences introduces the question of how essential the co-presence of (and/or collaboration with) other players is for producing the affective and behavioral responses that emerged with *Outbreak*. Perhaps appropriately given the topic of this paper, we look forward to exploring these questions in the future.

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6.

Heritage Destruction and Videogames

Ethical Challenges of the Representation of Cultural Heritage

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ABSTRACT

Representations of historical or cultural sites in videogames have always been contested by videogames scholarship, arguing that historical games often court controversy. This paper examines the history of the National and University Library in Sarajevo, particularly the destruction of the site and how it has been

represented with different meanings across various media. The second part of the paper will analyze the representation of the library (post-reconstruction) in the videogame, *Sniper: Ghost Warrior 2*'s Act 2 (called 'Ghost of Sarajevo'), in order to raise issues about the ethical challenges of the representation of a heritage site that has not only been destroyed and reconstructed, but that it is part of a national heritage.The analysis shows that there are important pressures derived from the ways in which videogames represent heritage which has gone through a process of destruction, and how videogames adapt a historical event following formal videogame conventions. The paper concludes by pointing out the benefits of studying cases such as the National and University Library in Sarajevo, as well as new avenues of research regarding the representation of contested cultural sites in videogames.

Keywords

Cultural heritage, history, epistemology, heritage destruction, representation in videogames

INTRODUCTION

Scholars have raised questions concerning the representation of real sites in videogames, suggesting that these representations do not always correspond to real sites and often involve complex processes of collective memory (see, for example, Westin and Hedlund 2016; Dow 2013). Moreover, the representation of heritage sites – sacred sites, cultural landscapes, monuments – is often problematic because they are chosen either by the local community, the nation, the State or international organizations like UNESCO, to symbolize or commemorate a particular heritage,while neglecting and erasing others. Therefore, heritage sites are the focus of complex debates and contestations as to their meaning, use and ownership (García Canclini 1997). Where videogame models are highly destructible, capable of being

respawned and destroyed in multiple different ways, historically and culturally significant heritage sites are unique, and their destruction leaves an ethical wound on historical consciousness. Indeed, this was the case of the National and University Library in Sarajevo, which was physically attacked in 1992 during the siege of the city by Serbian forces.

Discussions of the relations between heritage and media representations have considerable provenance. For example, photography and film seemed to Walter Benjamin (2003) to be stripping artworks of their aura: their unique provenance and history gives way to their technical reproducibility. Once photographed, a great work of art could potentially be experienced anywhere and in dynamic new conformations. The decay of the aura was in part democratizing, but it also created significant problems for historical consciousness by removing the works from their original contexts and traditions. Videogame models and environments are far more reproducible than anything Benjamin could have anticipated. Such models are capable of being manipulated, destroyed and respawned within the virtual world at a whim: if you experience a Game Over, simply re-load and try again. As such, the logic of Benjamin's argument is further emphasized in games: the representation of lasting trauma and harm that can characterize historical conflicts is often sidelined or simplified in videogames, setting the scene for clashes between different systems of value and signification.

This can be seen in the controversy surrounding the inclusion of a virtual model of Manchester Cathedral in *Insomniac's Resistance: Fall of Man* (2006) as a game level. Set in an alien invasion, players of the game fight through the ruined cathedral: this not only brings the gamer mode into a sacred space, but also imagines it as a destroyed remnant. Once again, this stands as an example of a perceived breach of the boundaries of the "limits of play" (Chapman and Linderoth 2015). For example, church leaders were highly critical of the game, while then-Prime Minister of the United Kingdom, Tony Blair, echoed concerns about gun violence,

the influence of the game on young people, and the need for game companies to consider wider social responsibilities (Dubey 2008). Sony, for its part, argued that the science-fiction scenario was sufficiently alienating to distinguish its product from an attempt at desecration (utilizingthe alibi of ambiguity provided by the kind of fictional upkeying; see below),but nevertheless issued an apology for any inadvertent offense it may have caused. Bogost, however, asserted that the reference to the real cathedral encapsulated in the computer game model oriented players to a structure that "demands respect" and a kind of "reverence" (Bogost 2007).

This gamut of responses shows the cathedral to be the locus of contradictory meaning-making processes – the introduction of an auratic and unique appearance into a space which is greatly characterized by reproducibility and a ludic nature. Videogames and heritage sites are both spaces characterized by intensive processes of change and stasis, tension and conflict. If heritage sites are problematic in the society where they are built, the representation of a heritage site that has been targeted and destroyed, and filtered through science-fiction tropes is even more problematic. In this paper, we seek to tease out the ethical ramifications of the representation of one onto the other. The ramifications take into account how cultural sites are inherently contested due to the myriad of symbolic values they possess, and how videogames' formal apparatus further emphasize the ethical issues around the representation of a targeted heritage site, alluding to the problems encountered when the memory narratives associated with the represented site are not properly addressed in the videogame. The paper does not make one argument, but seeks to point out various ethical challenges that arise when conflicting heritage narratives are represented in a ludic environment. Analyzing the representation of cultural heritage in videogames provides a nuanced understanding of the meanings of the past in virtual reality discourses.

As such, this paper will define cultural heritage, and also establish its contentious nature. The paper will then record the history of

the National and University Library of Sarajevo, with a particular focus on the destruction of the site, and how it has been represented across different media with different meanings. The second part of the paper will analyze the representation of the library (post-reconstruction) in Act 2 – 'Ghost of Sarajevo' in the videogame, *Sniper: Ghost Warrior 2*, in order to raise issues about the ethical representation of heritage sites that have not only been destroyed and reconstructed, but are part of a national heritage.Players entering the representation of the National and University Library of Sarajevo do so in a playable flashback that is recalled by the player character, U.S. Marine Captain Cole Anderson. The library is presented in ruins and with the books burned, but very little context is given as to the events that led up to its destruction: instead, the focus is on Anderson's military exploits and on the way that the flashback informs his contemporary ethos and way of making war.

CULTURAL HERITAGE: THE NATIONAL AND UNIVERSITY LIBRARY OF SARAJEVO

The definition of cultural heritage has seen a shift in recent decades from traditional definitions in which heritage was seen as monumental buildings and collections stored in museums and libraries. These 'tangible' aspects of cultural heritage have been expanded to also include the intangible aspects of heritage – oral histories, traditions and songs. Both tangible and intangible heritage has been described as a cultural process rather than a product (Viejo-Rose and Sørensen 2015: 282) and one in which figures of authority and expertise outline the conditions by which some objects and traditions acquire the status of heritage and cultural significance (Smith 2006). On the one hand, excluding some objects or sites as part of a national heritage canon can lead to neglect and disrepair; on the other, selecting a site or an object to be part of the national canon elevates it to the status of national heritage, contributing to its destruction when conflict arises due to its symbolic value.According to scholars, the form in which

cultural heritage operates is through a dualism: it is a resource of the past that is commodified in the present for contemporary consumption, and the benefit of future generations, thus advancing economic development and tourism (Graham et al. 2000: 22; Stone 2016: 40).

Needless to say, seeing cultural heritage as a cultural process where different values are negotiated and managed, rather than a static object endowed with fixed meanings, filters our understanding of cultural heritage during times of conflict, as the meanings ascribed to a particular cultural heritage can quickly change before, during and after the conflict during post-recovery and reconstruction (Viejo-Rose and Sørensen 2015).Different groups endow cultural heritage with different values and meanings, and as a result conflict of interests between communities, stakeholders and heritage practitioners may arise (González Zarandona 2015). As a result, "tension and conflict are thus inherent qualities of heritage, whatever its form" (Graham et al. 2000: 22). These dynamics influence how we use or abuse heritage for didactic or propaganda purposes, either on the ground or a digital platform such as a videogame. A recent example is the mediation of iconoclastic acts through social media as performed by the so-called Islamic State – a terrorist group that filmed themselves while destroying cultural artefacts in Iraq and Syria – highlighting iconoclasm as a key activity in their campaign to obliterate the rich pre-Islamic and Islamic material culture of the Middle East (González Zarandona et al. 2018).Although these videos contributed to raising awareness about the vulnerability of heritage sites in the Middle East, they also underline the difficulty in defining heritage in a contested scenario – your idol, my heritage.

National libraries, and for that matter national museums, are an example of what heritage scholars (Tunbridge and Ashworth 1996) consider a "contested site". Contested sites possess a high symbolic value due to the various meanings they confer through the content they hold, or because a community acknowledges

the site as important and as a repository of historical documents, that together, make up the social fabric of that community, thus reinforcing discourses of identity and belonging. As Graham et al. claim (2000: 24), it is the condition of "discordance or lack of agreement and consistency as to the meaning of heritage" that makes its dissonance or contestation inherent and implicit in our discussions about said heritage. The national character of buildings, such as the National and University Library in ex-Yugoslavia, transcended ethnic divisions amongst different communities "to highlight shared cultures and common histories, crossing over the boundaries of ethnoreligious ties and speaking to more universal Yugoslav identities" (Hartmann 2016, 313). For this reason, charged sites, such as the library, are heavily contested by groups that might feel that their identity or sense of belonging is not properly represented by the building, the meanings it conveys, the past it symbolizes, or the contents that the building holds. Representing the nation through heritage objects has always been a difficult task which combines the interests of state power with the need for significant intellectual and material resourcing (Boswell and Evans 1999). It is no coincidence then that the consideration of the word "heritage" to designate the past as a resource for the present surfaced at the same time "as the codification of nationalism into the nation-state" (Graham et al. 2000: 11).

The *Vijećnica*

The building that housed the National and University Library in Sarajevo – *Vijećnica* (city hall) in Serbo-Croatian –was built between 1881 and 1896 when Bosnia-Herzegovina was still part of the Austro-Hungarian Empire. It did not become the National Library until 1945, and four years later with the opening of the university,the collection of the University of Sarajevo was transferred to the pseudo-Moorish style building (Zeco 1996). By the mid-1950s the library was a fully-running research library providing a gamut of cataloguing and administrative services to scholars, students and the population in general (Zeco 1996: 295). The national library contained, amongst other valuable assets, the

country's national archives and the collection of the University of Sarajevo (Riedlmayer 1995: 7), reflecting the particular multicultural character of the country on the type of assets and archives that the library, until 1992, collected and preserved: works from the Muslim, Croatian and Serbian groups (Frieze 201: 58).Thus, it was considered"the most important depository of the national and cultural history of the country (Zeco 1996: 294).

In August 1992, during the Siege of Sarajevo, extreme nationalist Serbs targeted the building, and it was almost completely destroyed. Over 1,200,000 volumes and 600,000 serials were lost to the flames (Bakaršić 1994). The motivation to destroy the site falls under the category that Stone (2016) deems specific targeting, and Brosche et al. (2017: 249) consider conflict goals motivations, that is, *Vijećnica* was targeted because the cultural identity it reflected at the time of the conflict was a contested issue. This is also reflected in the fact that on the night of the 25th August, when Serbian forces started to shell the building, they also shelled the surrounding streets so the firefighters could not reach the building and stop the flames from consuming the books and the building itself (Zeco 1996: 297). This destruction is one of the many examples that history has witnessed across centuries that has seen libraries around the world being targeted due to their symbolic cultural value. Famous examples include the destruction of the Alexandria library in 640 BCE and the destruction of the Louvain University library by German forces in 1914 (Tollebeek and van Assche 2014).

The destruction of libraries is a potent symbolic act because it seeks to erase the past (Riedlmayer 1995) tore-write the past and shape the future. It is what Robert Bevan calls the "destruction of memory". The attack on the *Vijećnica* "was directed at collective memory, shared history and attachment to place and the built environment. It was designed to eradicate the historical presence, as well as the contemporary lives of the target community." (2016: 60) This destruction was directed towards the erasure of the records, histories, stories and individual heritage that attested to

the multicultural aspect of Yugoslavian society – in a sense, its cultural identity. However, the library was not only a place where cultural identity was forged through association with the building and the objects it once housed (Chapman 1994: 120), but also a place where people regularly met and fostered intellectual discussions (Frieze 2011: 59). Therefore, its destruction also symbolizes the destruction of a site wherein critical thinking was sustained. Moreover, Frieze (2011: 66-67) also considers that the destruction symbolizes an act of self-destruction since it was a Bosnian Serb scholar, an expert on Shakespeare, and Serb Democratic Party Vice President, Nikola Koljevic, who ordered the destruction of the library. In this sense, the destruction of the library is read by Frieze (2011: 68) as "a sign of an intention to destroy a particular group, physically, biologically and/or psychologically; and that cultural destruction is in some instances not equivalent to genocide, but is inherent within genocide."

Photographs of the aftermath played an instrumental role in disseminating the extent of the damage done to the library, particularly those taken inside the library while cellist, Vedran Smailović, was playing his instrument. The photographs helped frame the tragedy and disseminate such a sensitive content, because the pictures seemed real and authentic, even though they were clearly staged (Sontag 2003). The library reopened in 2014, shortly after the building featured as a ruin in the video game *Sniper: Ghost Warrior 2* (City Interactive 2013). Currently, the building does not operate as a library; it is where the administrative offices of the city hall were relocated, thus perpetuating "the growing fragmentation of identity" in Bosnia Herzegovina, and shifting its function from "a storehouse for collective memories and identity formation" that promoted "shared culture and plurality", to a building that "serves the purposes of the city administration …and symbolically excludes Serbs with the plaque [acknowledging "Serbian criminals" as the culprits responsible for the destruction of the building] at its entrance." (Hartmann 2016: 321) Similar to the *Vijećnica*, an action that also generated fragmentation and division amongst the local population was the

re-labelling of the National Museum in Sarajevo as a space for contemporary art, rather than a place "which had the potential to be used to recover a sense of the shared history of the region." (Viejo-Rose and Sørensen 2015: 288) In both cases, recovery does not mean that previous unresolved conflicts can be easily forgotten by refurnishing the buildings, as they possess a high symbolic value that cannot be dislodged with violence.

If heritage sites are difficult to assess in the society where they are built because of their contentious nature, the videogame representation of a heritage site that has been targeted and destroyed is even more problematic. Iteration of its destruction in the videogame might not provide an actual representation of its library, but also, it might be difficult to situate it in a broader cultural framework.

A recent theory of iconoclasm (Clay 2012) establishes that iconoclasm – typically seen as the *destruction* of religious images – is, in fact, a *transformation* of signs, making iconoclasm, like heritage, a continuous process, always evolving in different directions. For example, the destruction of a religious statue is achieved by destroying the face or the body, but then this broken statue would be read as a different sign – a sign of violence perhaps but also as a ruin. In the case of *Vijećnica* in Sarajevo, the signs of its destruction have been transferred to *Sniper: Ghost Warrior 2* with eloquence and realistic endeavour, in particular in Mission number 6.

The limits of representation

Certainly, there are limits of representation in many areas of visual culture. The topic of taboo comes to mind when we analyse why some images and ideas, cannot be represented, to the detriment of free expression, due to issues of repression that may affect a group. When this is the case, we find ourselves in a situation of iconoclasm, where images are destroyed, covered, defaced and removed, so they do not affect or disrupt the current status of a

certain group in a particular society and transgress their established norms. Examples include pornography and explicit graphic images depicting executions or physical abuse. In a similar vein, the representation of heritage destruction may also be considered a taboo, because pictures of the destruction can bring back bad memories to those persons who witnessed the event, and the traumatic memories of the conflict resurface.

However, the representation of destroyed heritage also reminds us of the past, history and particularly, the violence that was part of that history and past. The representation of traumatic events, through tangible or intangible heritage or memory narratives, remains particularly problematic because we show the representations of these narratives to younger generations in the hope that they are pedagogical and therefore assist in preventing similar violence in the future. However, the mnemonic aspect of heritage may also trigger negative memories that run contrary to the desired effect. Certainly, one of the most celebrated and criticized functions of heritage in our contemporary society is the fact that heritage may symbolize and commemorate entire periods of violence, as well as neutralize or erase that violence from collective memory (Viejo-Rose 2015).

In our visual culture, videogames provide an opportunity to educate people in reading images. However, what limits should we criticize or enforce when it comes to the representation of destroyed heritage in a new environment, but one that does reinforce the violence that occurred at the site? It was Stuart Hall who argued (1997: 61) that by producing and exchanging meanings, these constantly change and "will always change, from one culture or period to another." Similarly, which meanings are represented and transmitted through cultural heritage has been the focus of debate in the last few years, since, as described above, cultural heritage "fulfils several inherently opposing uses and carries conflicting meanings simultaneously" (Graham et al. 2000: 3). This dichotomy extends to the representation or visualization of heritage as a commodity for consumption, as is the case with the

representation of the *Vijećnica* in *Sniper: Ghost Warrior 2*. Which meanings are enforced in this case?

Engaging with a real past often involves a higher level of scrutiny, meaning that historical games often court controversy (MacCallum-Stewart and Parsler 2007). Furthermore, previous research has indicated that games are often perceived to be an unsuitable form for dealing with sensitive or controversial content (Chapman and Linderoth 2015; Chapman 2016B). In this research, which examined these "limits of play", it was found that controversies generated by games dealing with such content seem to revolve around two particular issues. Firstly, that placing serious thematic elements into a ludic system runs the risk of them becoming trivialized, because the player may attend only to their gameplay, rather than representational function. And secondly, there was a fear of particular playable positions, e.g. instances when a game"casts at least some of the players in the role of the generally perceived historical antagonist and thus allows the players to re-enact historical episodes of exploitation, cruelty and abuse through their in-game actions" (Chapman and Linderoth, 2015: 140).These issues seem to affect the kind of history that is included in games. For example, although World War II is a very common theme within videogames, the Holocaust is almost never mentioned, and even elements associated with the Holocaust (e.g. Nazi ideology, units, organisations, symbols and leaders) are frequently excluded (Chapman and Linderoth 2015). Similarly, the relative lack of engagement with aspects and imagery of World War I history common to other popular historical media representing the conflict (and therefore common to popular memory) may also be partly explained by these tensions between form – or cultural perceptions thereof – and sensitive content (Chapman 2016B).

Given the sensitive nature of events involving extreme nationalism, ethnic prejudice and genocide, these tensions perhaps also explain why the Bosnian War is a conflict that is rarely included in videogames. This is despite the fact that many other

European conflicts of recent years are frequently included in games, and the Bosnian conflict would similarly seem to have the material elements of modern warfare that suit contemporary first-person shooter (FPS) gameplay. *Sniper: Ghost Warrior 2* obviously stands outside this trend by including the National and University Library of Sarajevo, a building very much associated with this conflict. And yet we also see a similar pattern of exclusion here: while the building is included, its relation to national identity and its significance within the conflict (the most contentious aspects of its history) are not included in the game. Thus, the manner in which the site is represented in the game may not only be due to the particular pressures of the game's simulation style (see below), but also be due to the larger cultural perceptions of the appropriateness of playing with contentious content.

The library is also an interesting example of contested or sensitive historical content in games for another reason. When games do include content that is potentially sensitive, this tends to be done by couching this content in frame cues that seek to deflect criticism. These frame cues attempt to add another layer of meaning to the representation by "upkeying" (Goffman 1974) away from the primary framework of meaning. In games, this is often done by attempting to frame the game's inclusion of the sensitive content as having a documentary, memorial, educational or artistic value (Chapman and Linderoth 2015). However, it would appear to be possible to also deflect criticism by introducing an additional fictional layer (and concurrent frame). Situating real and potentially controversial content in a larger fictional diegesis creates an upkeying that offers an alibi through ambiguity: in any moment of *Sniper: Ghost Warrior 2* gameplay with/within the library it becomes unclear if what is being commented on by the game is the real destruction that occurred in 1992 (arguably the primary framework), or the added fictional one that the game introduces in its narrative and which sustains and motivates Anderson's involvement.

A similar pattern of representational strategies can be seen in *This War of Mine*, a game in which the player controls a group of civilians trying to survive a war that surrounds them. This game, though widely believed to be based on the Siege of Sarajevo, is similarly framed as being set in a fictional and non-specific besieged city. In both this case and in the case of *Sniper: Ghost Warrior 2*, this has utility. The game makers can be lauded for their inclusion of often overlooked and difficult historical content, yet any perception that the meanings attached to this content by the game are in some way inappropriate to the perceived source can be deflected by leveraging the distancing effect of the fictional framing of this content and the simultaneous ambiguity of commentary that this creates.*Sniper: Ghost Warrior 2* is, therefore, an interesting example to point to the tensions between the form of games and the representation of difficult or contentious heritage. Furthermore, this example also points to the complexity of discursive potentiality and possible strategies of negotiation that can be imbued within or surround even relatively simplistic uses of heritage in games.

GAMES AND/AS HISTORY

We will now more robustly theorise the appearance of the National and University Library in *Sniper: Ghost Warrior 2* through the context of scholarship on games and history. It is now fairly well accepted within the field of game studies that videogames can function as, or in relation to, history (see Chapman 2016A; Kempshall 2015; Uricchio 2005). However, the existing discourses and new problems/possibilities that this new form of engagement might entail are only beginning to be explored. For example, it has been suggested that games have a particular capacity to offer "historying", e.g. to offer engagements not only with representations of the past, but also historical practices associated with engaging this past (Chapman 2016A). Specifically, the historical game form's potential to offer heritage experiences (Champion 2015) is of particular relevance to the representation of

the National and University Library of Sarajevo in *Sniper: Ghost Warrior 2*. In the game, the player has the opportunity to explore this representation of the building in a way similar to visiting a heritage site.

As Prentice (1996: 169) argues: "Museums, like many other heritage attractions, are essentially experiential products, quite literally constructions to facilitate experience … feelings and knowledge based upon personal observation or contact by their visitors". Heritage re/constructions in videogames, also designed as experiential products, function similarly. Players entering the representation of the National and University Library of Sarajevo are invited to enjoy the virtual space as a resource, challenge and strategic element of gameplay. However, given the history of the building depicted, the game space also has a possible symbolic and epistemological function. That is to say that, just as in the museum, there is a potentiality for feelings and knowledge to be facilitated through personal observation, contact and of course interaction. This potentiality can be realised by any player with an interestin the heritage context, but is particularly relevant for those players for whom the socio-cultural significance of this space relates to their localised understandings and experiences. Additionally, "games also give us an exploratory agency somewhat parallel to the museum experience, and which goes beyond more passive historical media (such as cinema), by allowing us to manipulate the spatial representation and adjust our perspective" (Chapman 2016A: 175).

As such, the very inclusion of the National and University Library can be viewed as a positive pedagogical feature of *Sniper: Ghost Warrior 2*. The game opens up potential popular engagement with a heritage site, and one that relates to a history comparatively rarely dealt with in a broader popular culture, particularly in the form of games. Certainly, the game's representation of the library has at least some basic pedagogical potential. Visual information on the heritage site is presented to players in a manner that echoes the fundaments of typical heritage experiences (e.g. seeking to

construct similarities between the visual field of the contemporary visitor and those proposed to have been experienced by historical agents) and also similarly affords players opportunities to indulge their curiosity about the site through exploration.

However, it must be noted that there are also some significant differences in this regard. For instance, the experience of heritage in games is often subject to pressures arising from game design imperatives that trump realist or historicist goals. This would certainly seem to be the case in *Sniper: Ghost Warrior 2*. Players enter this virtual heritage space as it lies in ruins, and as the player character, Captain Anderson. Their experience is subject to the ludic pressures of potential enemies which, if they are not attended to, run the risk of producing a fail game state. Players must therefore constantly respond to the pressures of finding their way through space and past these enemies to progress. They are therefore invited to see lines of attack, potential areas of cover, means to hide and flank the enemy (or in turn be flanked by hidden enemies), and search for paths of progression.

Players are enmeshed in the gameplay affordances of the representation of the library, a potential distraction from attending to the fact that this game space also affords the representation of heritage, and therefore an engagement with a raft of potentially important socio-cultural discourses of history and identity. In essence, the game invites the player to enter what Anders Frank (2014), in his study of military training war-games, terms the "gamer mode", "where players are mainly concerned with winning the war-game, disregarding what the theme is meant to represent." This is hardly only a problem unique to *Sniper: Ghost Warrior 2* and is certainly a frequent tension between form and content in many games representing the past or related to discourses about it.

It could be argued that players can reduce these ludic pressures (by, for example, killing enemies) and then spend time exploring the space if they wished to. However, given the particular history of the library, this dynamic in *Sniper: Ghost Warrior 2* does perhaps

run uncomfortably close to some of the reasons that the building is so contentious as a heritage site in the first place. By inviting players to treat the space not as a heritage site, but as a space of military utility as seen by an American protagonist, it does seem that the game, however inadvertently, almost invites the player to echo the treatment of the building that resulted in its destruction in the first place. The key difference here is that players are invited to treat the space as a military resource by *ignoring* its symbolic value, whereas it is precisely the cultural symbolic value of the National and University Library that made it a target for destruction in reality – alongside the (at least partly military) utility of such collective psychic violence in conflicts of this type and the resulting "weaponisation" of heritage.

Whether this is actually problematic depends of course on one's perspective on the licenses and alibis for interaction granted by play (e.g. should players be accountable for actions conducted in playful fictional worlds anyway?) Furthermore, by not highlighting the cultural significance of the space, the game allows for a further distance to be maintained between the actions of the player engaged in gameplay and the militants who destroyed the actual building, as does the game's added narrative framing motivating and justifying the player's particular actions within the space.And yet this also simultaneously ignores an important aspect of the building's history and cultural context, leaving the game open to accusations of only superficially engaging with the National and University Library as a prop (and therefore insensitively) and – from a more cynical perspective – whitewashing its history of potentially uncomfortable content. Furthermore, photographs taken inside the library before its destruction, compared to the actual design of the library in the videogame, provide further proof that the designers of the videogame deliberately, perhaps, designed the library without some key resemblances to the original, thus contributing to the confusion that the player might experience. It should be noted, however, that this kind of "selective authenticity" (Salvati and

Bullinger 2013) seems to be a common feature in historical games (Westin and Hedlund 2016).

This suggests that the library is merely a prop within the videogame and that the design minimizes its potential for cultural and historical meaning: in-game, the characters merely refer to it as "that library". *Sniper: Ghost Warrior 2* is limited in terms of authentic engagement with history by its affordance-based ludic structure: where the building was historically used for meetings and discussion, in the game it is primarily a navigational aid ("There's the library. But I'll get smoked out in the open. Gotta go around") or as a source of cover and pacing for encounters with enemy combatants ("Anderson find a good position to return fire, or get the hell out of that library, pronto!").

In part, these exclusions can also be attributed to the inherent pressures of the game's chosen style of representation. Just as in the construction of any other heritage experience, with games,we must not only attend to the information that is presented in the game but the means by which this presentation occurs and the tensions between form, mode and content this implies. For instance, *Sniper: Ghost Warrior 2* utilizes a "realist simulation style" (Chapman 2016A, 59-89). Such simulations are characterized by the claim and attempt to show the past as it appeared to historical agents and typically feature rich visual representations. Generally, this entails creating environments with good spatio-temporal coherency and context. This has advantages, such as adding a layer of information by situating objects and architecture in their relative historical environmental context, giving clues as to their relative historical relations and providing a full environmental gestalt.

However, there are also downsides to this realist spatio-temporal rendering of environments and objects, insofar as it "involves the loss of some of the rhetorical freedom that museum exhibits have in creating meaning about the past through thematic sequencing and/or an atopism and anachronism … [where] items from wholly

different times or places can be placed together in order to draw comparisons or show change over time" (Chapman 2016A: 176). Specifically,in relation to *Sniper: Ghost Warrior 2*, this means that the game only offers a "snapshot" of the history of the National and University Library of Sarajevo. The building's *change over time* (which is arguably the central concern of history and certainly central to this particular history), the events leading to its construction, destruction and eventual reconstruction, are not explored through this particular simulation style. To do so means either to dedicate a significant portion of the game to repeated visits to the library at different points (running the risk of breaking the game's diegetic continuity and consistency) or to add a layer of supporting information through other modes (most commonly in the form of text, video or audio explanations) that could also only deal with the history up to the point in time at which the player enters the library (i.e. excluding "future" developments) or similarly risk breaking the game's diegetic coherency.However, in a design common to FPS games, temporality is mapped onto the realist space: events that represent narrative progression are keyed to the moment when players, like Anderson, reach certain spatial points in the game level.

This is compounded by the fact that games utilising realist simulation styles tend to have a heavy emphasis on and capability for the representation of material culture: such games often have relatively rich visual data loads concerning this material. Like the film, these simulations are characterized by a "plenitude of visual details, an excessive particularity compared to the verbal version, a plenitude aptly called by certain aestheticians visual 'over-specification' (*überstimmtheit*)" (Chatman 1980: 126). However, these same simulations have to expend significant effort and resources to represent less tangible aspects of culture. This is the case in *Sniper: Ghost Warrior 2*, with the game offering a representation of the material aspect of the library itself, for example,its distinctive Moorish style architecture, strewn with shattered bookshelves.Intangible heritage is far more difficult to represent within the pressures of the realist simulation style and its

focus on materiality in comparison to the other major simulation style of historical games: the "conceptual simulation style" (Chapman 2016A: 59-89). In these latter simulations, characterized by abstraction (simple visual cues supplemented by text, charts, menus, text and maps) and which function more as a simulation of discourses about the past than a direct representation of it, intangible aspects of history and culture are much more easily represented.

The developer can, for example, relatively simply create a rule representing how these intangible cultural discourses, ideas, identities and systems function and the kind of affordances they imply, and then establish and contextualise this representational relationship through text or simple visual cues (and all without worrying about impinging on a visually and spatio-temporally coherent diegetic world).The intangible aspects of the library could, therefore, be included and explored (however reductively) by tying it to gameplay systems that attempt to represent interlinked processes of national identity, ideology and culture, such as those we see in strategy games (which commonly utilise conceptual simulation styles).This is far more difficult within the game's chosen realist simulation style. As such, it may be that the aspects of the library concentrated on in the game (e.g. the material but not the important cultural/symbolic aspects) are at least partly determined by the pressures of form upon the historical content. These exclusions seem particularly important to the library, given both the losses that the destruction entailed and also the site's symbolic role in relation to various cultural and national identities.

Furthermore, realist simulation styles are also potentially problematic because in their visual specificity and emphasis on claiming to show the past (or material of that past) as it appeared to historical agents, they also generally function through a reconstructionist epistemological approach (Chapman 2016A: 66-69). This is part of Munslow's (2007) tripartite classification of epistemological approaches: reconstructionist (a concern only with facts), constructionist (a concern with facts as selected, arranged

and explained according to theory) and deconstructionist (a concern with the way the history itself is written). The reconstructionist perspective is the most naïve epistemology of the three and is conservatively Rankean in its approach to the past. Realist simulations tend toward this kind of epistemological approach because of their concern with visual specificity, diegetic coherency, and their subsequent inherent autoptic authority.

This results in games that tend to be univocal and struggle to include the possibility of conflicting accounts or interpretations. Furthermore, also due to these characteristics, such games also tend to hide the role of the historian (in this case the developer) similarly to the way in which the rhetorical techniques of written history, described by Barthes (1987) as the "discourse of history", also often do. This discourse positions the representation as a simple mediation between past and present (rather than a subjective construction) and therefore subsumes the uncertainty, underlying ideologies, subjectivities, pressures and unresolved questions of the process of representation, instead of enhancing the authority of the text. This would seem to be potentially problematic in the case of heritage sites such as the National and University Library of Sarajevo. Firstly, in the sense that the representation found in the game appears to deviate significantly from primary sources (such as the aforementioned photographs of the library's interior) and secondly, and perhaps more importantly, because the library is a site not only of literal destruction and reconstruction (introducing questions about its subsequent virtual reconstruction), but also one of contested meanings and identities.Furthermore, even, generally speaking, the idea that any simulation can capture everything of a historical environment that it represents is clearly problematic to wider questions about the nature of historical work, and yet this is the underlying emphasis of the realist-reconstructionist simulation which players are invited to accept.

In sum, three major difficulties with the depiction of historical sites in videogames such as the National and University Library of

Sarajevo in *Sniper Ghost Warrior 2* have been identified thus far: the "gamer mode" in which the uses of the building are reduced to the ludic structures common to the shooter genre; the tendency to naïve reconstructionist historical epistemologies; and the bracketing out of conflicting meanings and interpretations of the historical site's legacy, possibly due to the concentration on a realist simulation style and potential concerns about the clash between the game form and sensitive historical content. By not representing the library in a clear context, including the tensions and debates surrounding the site, the destruction of the library becomes a spectacle.

INTERACTING WITH HERITAGE

Overall, the heritage experience structured by *Sniper Ghost Warrior 2* doubtlessly has both an epistemological and affective potentiality as an audience-led historical activity. However, while the particular choices in the reconstruction and deployment of the library within the game allow for these possibilities, they also clearly introduce pressures, exclusions and potentially problematic forms of engagement. These choices also open up to the capacity of games for offering reenactment experiences, something highlighted as a significant aspect of the form (Chapman 2016A; Crabtree 2013; Rejack 2007). This possibility for reenactment raises questions as to exactly what role the player is invited to reenact in both their memorial and military interventions into the ruins of the library. As noted above, it can be argued that there is perhaps an uncomfortable echo of the library's destruction in the way the game asks the player to treat the representation as a military resource. But, to identify a fuller range of potential roles made available to players by the game, we must also consider other aspects, such as the narrative framing of the player-character's (and thus player's) activities. In light of this framing, we can ask if the player's role is a metaphorical reenactment of the destructive forces that resulted in the library's destruction in the first place or if players are invited into a cathartic experience whereby the wrongs

associated with the library's destruction are to be somewhat righted by the player's intervention? Or does the player's very presence seek to highlight the status of the library as a symbolic entity in cultural memory?

In addition to the issues of "playing" with the past, as noted above, the appearance of historical sites in games is also tied up with the complex and often contradictory processes of meaning-making inherent in the videogame medium that takes its place in a society of spectacle and historical crisis (think of contemporary discourses such as "fake news").The heteronomous flows of sensory experience that computers make possible are very powerful in their capacity for generating media experiences, but as the constant presence of glitches and flaws indicates, can often be unruly and difficult to control. What appears to be faithful recreations of real environments or complex battlefields are actually tricks of perspective in tunnel-like linear maps. Can computers generate true heritage experiences? As such, we must constantly remain critically conscious of the potential problems of virtual heritage representation, particularly given the simplistic reconstructionist epistemologies often espoused by such representations. We must also remember that heritage sites are ephemeral and the destruction inflicted upon them is contingent – monuments are mortal (Nelson and Olin 2003: 205). Therefore, the virtual heritage representation of the library may act as a reminder of the destruction because it contains signs of erasure. Virtual worlds have certainly transformed how we disseminate heritage, memories and history. In the case of *Sniper Ghost Warrior* 2, through the virtual destruction reconstructed in the videogame, the latter can always be accessed and replayed by the player, regardless of whether the context of the destruction is explained or not. Certainly, the heritage experience associated with the library before it was targeted cannot be experienced, but the reconstruction of the destroyed library provides a sense of the loss that a monument creates when it is destroyed. The meanings associated with the library were key objectives targeted by the Serbian forces. Once those meanings were erased through the destruction of the

building, the library became meaningless, but the signs of erasure remained visible. What do these signs communicate? On the one hand, the loss of a beautiful building and consequently the fracture of Sarajevo's social fabric; on the other hand, they trigger (negative) memories of the conflict. However, it is difficult to ascertain these signs because the 1992 destruction is not clearly referenced in the videogame.

Although *Sniper Ghost Warrior 2* does run the risk of reducing the National and University Library's significance in various ways, the central story seems to displace issues of historical complexity onto the life history of the player character. The level, called "Ghosts of Sarajevo", is, in fact, a flashback sequence in which the principal character recalls a traumatic event: the betrayal by his "spotter partner". This disarticulation of the two-man sniper squad, which is trained to combine seeing and doing into a neat continuum, can be read as a critique of the jingoistic militarism so common in games where heroes simply slaughter their way through waves of vaguely sketched enemy combatants in caricatural environments. And indeed, the burning books and scattered masonry of the building do give an oblique sense of the conflicting interpretations of its meaning. Thus, it makes sense to represent a traumatic event in such a traumatic site, where the destruction of memory occurred and where new meanings, through the depiction of heritage destruction, may come out.

The examples reviewed so far also reinforce the need to consider the appearance of historical sites within the wider significative strategies of a given game. For example, the final boss fight in *Metal Gear Solid 2: Sons of Liberty* (Konami 2001) takes place on the rooftop of a ruined Federal Hall National Memorial in a destroyed New York City, but this did not cause a similar reaction to the Manchester cathedral's inclusion in *Resistance: Fall of Man*. This is in part because, while *Sons of Liberty* was produced with high quality and visually "realist" graphical environments for its time, the game's welter of conspiracy theories, camp performativity and knowing referentiality inflect the appearance of

the historical site in a very different way to a game committed to a realist simulation style.

Likewise, the upcoming *Far Cry V* (Ubisoft, forthcoming), set in the United States and tasking players with fighting against a white nationalist cult, will also bring a new context to the depiction of heritage. In light of the recent controversy surrounding the toppling and destruction of a Confederate statue in North Carolina (Katz 2017), the game will be another site in which competing processes of heritage signification play out against what will likely be a typical 'gamer mode' approach to design. Similarly, *Wolfenstein 2: The New Colossus* (MachineGames 2017) emerged in a cultural and political climate that made its depiction of a Nazi-conquered United States take on an added note of controversy.

CONCLUSION

In presenting the case study of the destruction of the National and University Library in Sarajevo and its inclusion in a videogame, this paper has pointed out the various ethical challenges that emerge as a result of representing a traumatic event in a ludic environment. Heritage sites present significant problems and opportunities for game design; while game design presents similarly complex issues for historians and scholars who are, at least to a degree, responsible for cultural provenance. This reciprocal exchange shows complex dynamics in which contested meanings, videogame aesthetics, ludic pressure, and cultural norms all are brought to bear. Heritage sites have evident utility in videogames, if only because of their obvious potential regarding consumer recognition and engagement with collective memory. However, it is also clear that such sites often exacerbate potential tensions between the formal pressures of the videogame form and the historical content that they often contain. Studying the representation of such sites, therefore, offers opportunities to examine both the nature of games as a form of historical representation, and the discourses that surround heritage sites

which have been targeted. Heritage sites bring the cultural friction of history into the consumerist virtual spaces of videogames and thus provide a locus on which to reflect on how history appears in our present.

The paper contributes to scholarship that analyses the representation of history, heritage and culture in videogames, by selecting a heritage site that was targeted and destroyed during an armed conflict. By analyzing the different problematics around the representation of the National and University Library of Sarajevo, this paper has teased out one meaning-making apparatus for videogame players to engage with the past and rethink the present.

Likewise, this analysis could be applied not only to places that have been gone through the process of destruction, but also to contested cultural heritage sites that have experienced traumatic experiences, such as colonialism, and that are not properly represented in videogames. Such analysis can provide insights as to the tensions that arise when sensitive content is inserted in a ludic system of signification.

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7.

Considering play

From method to analysis

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ABSTRACT

This paper deals with play as an important methodological issue when studying games as texts, and is intended as a practical methodological guide. After considering text as both the structuring object as well as its plural processual activations, we argue that different methodological considerations can turn the focus towards one of the two (without completely excluding the other). After outlining and synthesizing a broad range of existing

research we move beyond the more general advice to be reflective about the type of players that we are, and explore two methodological considerations more concretely. First of all, we discuss the various considerations to have regarding the different choices to make when playing a game. Here we show how different instrumental and free strategies lay bare different parts of the game as object and/or process. Secondly, we consider how different contexts in which the game and the player exist, can function as different reference points for meaning construction and the way they can put limitations on the claims we can make about our object of analysis.

Keywords

Play as method, games as processes, games as objects, instrumental play, free play, game context, player context, ludoliteracy

INTRODUCTION

Many entering the field of game studies do so with great affinity with, and knowledge of, games. This does, however, not imply that these newcomers know from the get-go how to combine their close affective proximity to the medium to a clear research methodology needed to study and understand games from an academic perspective. This issue might even be more relevant for those entering the field as relative newcomers, for whom playing games – let alone studying them – seems daunting. For game studies as a research field there is an ongoing need to help newcomers get to grips not just with the complex nature of video games, but also with how to engage with them in an academic setting.

This need is not limited to researchers. Over the past two decades, a large number of programmes have sprung up at universities that teach students how to consider, and thereby, analyse games. These programmes sometimes take form in dedicated game studies

bachelors or masters, but in many cases, game-related research is part of broader programmes dealing with new media, digital culture, communication studies, or other related fields. Independent of the curriculum, students need to get to grips with the idea that, to quote Mäyrä, "analytical play as part of one's studies is different from leisurely play" (2008, 165). But what is analytical play? How do our actions, skills and background knowledge impact the analysis of these multi-cursal texts? And of course, how do we deal with these complex methodological issues to come to academically sound and relevant reflections of the game?

In this paper, we aim to set up play-related methodological pointers for students doing game research. Many have already pointed out that play lies at the core of studying games (Mäyrä 2008; Zagal 2010a; Fernández-Vara 2015). However, these often introductory texts to game studies leave the reader with the advice to be reflective and open about the type of player that he or she is, and seldom go into detail about how different playing modes can highlight different elements of a video game. As such, in many of these cases, play as method appears to be a matter that is frequently emphasized but seldom explored further.Our focus on play as method goes beyond the obvious – that a researcher should be able to play the games in order to understand them fully as a text with meaning or as a sociocultural and sociotechnical phenomenon. Rather, we engage with various methodological issues and considerations we might have as researchers-at-play. By connecting these issues and considerations, we aim to provide a more concrete methodological overview that can function as a guide that allows those studying games – especially newcomers to the field of game studies – to get to grips with analytical play. It should be made clear here that we do primarily focus on games research from a humanities angle, where textual analysis of games is a key approach. However, as playing games is the "most crucial element in any methodology of game studies" (Mäyrä 2008, 165), many of the observations and considerations should apply to other fields as well.

Discussing play as method Aarseth was among the first to reflect on the kinds of play approaches that fit best with specific research questions. He starts by acknowledging the problem that combining existing player typologies (referring to Bartle (1996)), game genres and a researcher's theoretical foundations can lead to a "cornucopia of analytical combined modes and angles" to study games (2003, 6). Therefore, Aarseth provides a more focused approach, suggesting that there are "different strata of engagement that playing analysis allows" (2003, 6). These range from superficial and light play, all the way to expert and innovative forms of play, where the latter even goes beyond playing by the rules, inventing entirely new ones. He acknowledges that the methodological reflections he offers are only first attempts, and that any further development of play as method will have to come from future research.His invitation for further research on the notion of play as method has been answered by Lammes (2007) and Karppi and Sotamaa (2012), among others, and will, in extension of these earlier elaborations, also be answered here. Lammes has critiqued Aarseth's approach for creating "a blind spot for situating the player/researcher in its particular local culture" and argues for a more context-aware approach in which the player acknowledges his/her position as both player-researcher (reflexivity) and agent within a certain socio-economic cultural and historical context (situatedness) (2007, 27). Here Lammes criticizes Aarseth for approaching games as "universal" and "hermetic" phenomena even though "play is a more messy cultural practice" (2007, 27). Also Karppi and Sotamaa (2012) argue for a more context-aware approach by shifting the focus from the game as object to the game as process. They argue that Aarseth's later exploration of the role of the player in game research (2007) puts too much emphasis on the game as object, while, according to them, a game should instead be seen as an assemblage of human and non-human related components including the game and the player's incorporeal enunciations and actions as well as their many socio-economic, cultural and historical linkages (2012).

Both Lammes and Karppi and Sotamaa offer valuable methodological considerations and suggestions, but at the same time pay minimal attention to play as method itself. Lammes, for instance, does not elaborate on *how* a game scholar would go about acknowledging his/her situatedness when studying a game or writing up the analysis, nor does she elaborate on how one would (or could) avoid purely idiosyncratic readings of a game, given the suggested individual nature of the player's "environment". Karppi and Sotamaa's approach, in turn, seems particularly useful in pushing the analysis past a focus on either the player or the game, and towards the various forces and connections holding up the assemblage of games as processes. However, in doing so, their approach becomes more of a general lens highlighting such linkages rather than a method that provides us with some concrete considerations about the different impacts of actions and backgrounds we employ in analysing a complex multicursal text. Furthermore, by only considering games as processes, their approach highlights one end of the methodological spectrum in which a free active player is given analytical preference over a game system purposefully designed to structure that play behaviour. This means that their analysis risks completely slipping away from the material architecture of the game towards transgressive play behaviours which, as Karppi and Sotamaa themselves put it, "exit the structure and rules of the game" (2012, 425).

Working towards a more concrete set of considerations for playing as a method, our aim is certainly not to set aside this earlier work, but to elaborate and build on these (and more) works. To illustrate our argumentation, we will reference existing analyses of a variety of different games, and the choices which made the analysis possible. Underpinning this, we bring together a more or less disparate set of loosely connected works. Before we can start discussing play as method more closely, we wish to briefly discuss the coupling of games and play, and pull the focus back from Karppi and Sotamaa's (2012) sole focus on games as processes or Aarseth's (2007) focus on games as objects, to finally come

to an understanding of games as texts. In line with Fernández-Vara (2015, 11-12), we consider texts in a broad sense as both a shaping authoritative game structure (what Barthes (1977) would call a 'work') as well as a played set of meanings and behaviours which exist in an intertextual web of cultural, social and historical perspectives (what Barthes (1977) would call the actual 'text'). In the next section, we discuss games as both object and process, which ultimately results in different methodological considerations.[1]<

A GAME AS OBJECT AND PROCESS

The notion of games as object and games as process connects to two broad and often opposing ontological strategies within game studies. First, there are those who are trying to find their way around the complex issue of multiple 'playings' and try to gain intersubjective access to the formal components of the game as object (cf. Björk & Holopainen 2005, Bogost 2007). In this case, scholars assume that the game object provides some core structure that encourages or even enforces certain play actions to be performed, and aim to study this structure in relation to – or in spite of – the various actions it may facilitate. Second, there are those who submit to the inherent selectivity of our play actions and argue that a game should be understood in the form of its (partly) subjective actualization (cf. Atkins 2003, Malaby 2007). These scholars consider games as activities or processes (as in, 'this game of chess is amazing') rather than as material objects (as in, 'can I borrow your game of chess') (see Aarseth 2001 and

1. Of course, we realize that it is very difficult (if not impossible) to come to methodological considerations that are universal for the vastly diverse range of games available. However, we argue that as long as one is willing to adopt our underlying ontological assumption that games are texts that require enabling or activation by players (and thereby can be considered as both objects and processes that can be read), the various considerations discussed in this paper can be useful for any researcher at play. In that case, the choices and contexts considered will depend on one's research question and more pragmatic things such as the researcher's repertoire knowledge and the amount of time available.

Frasca 2007 for this division). For instance, literary scholars tend to consider individual play sessions (i.e. what happened during one play-through) as 'texts' and objects of study (cf. Atkins 2003). In both these cases, of course, play still takes on an important role. However, for the first group interested in games as objects, play becomes a methodological challenge, while for the second group interested in games as processes, play becomes an object of analytical interest itself.

Within game studies, this has led to a distinction between what Smith has termed formalist and situationist methodologies, where "the former is an attempt to study and categorize formal aspects of games" and the latter "seeks to study concrete gaming practises sometimes arguing that gaming is context dependent and cannot be studied in the abstract" (2006, 39). As Egenfeldt-Nielsen, Smith and Tosca have pointed out, this distinction can be seen as separated schools of thought with their own established conferences and journals (2016, 12). Rather than seeing a game as a designed object, or approaching games purely as an activity, Stenros and Waern frame games "as residing in the sweet-spot intersection between designed activities and enacted experiences; they are consciously designed activities that we engage in purely in order to experience something" (2011, 16). Their approach to think about games as residing between designed activities and enacted experiences helps to understand and position our research questions somewhere on the continuum (rather than on either end) between a games-as-objects and games-as-processes distinction.

Being able to understand our research questions somewhere between games as objects or processes positions also allows for more specific methodological considerations to study games and play. As all games require player input to "come to life", focusing only on the structural elements of a game, like its system of rules, puts a researcher in danger of ignoring the fact that play does not always abide by the rules set by a game's design. Similarly, just looking at play styles and practices might miss the meaning game designers knowingly or unknowingly instilled in a game,

or other aesthetic dimensions of a game's design. Whether that is problematic within one's research design depends on the research question, but entirely ignoring either side might not lead to a full understanding of the issue at hand. Understanding one's research position as located somewhere between opposites helps in making appropriate choices related to playing a game for analytical purposes as well as taking into account contextual matters when doing so. This is where we want to go next. In the section "Considering play" we discuss various matters of time investment and dedicated play strategies for a game researcher. In the section "Considering context", we bring forth issues related to the context of a game in terms of genre, platform, culture and so forth, as well as the situated context of the player-researcher him or herself. In both sections, we will discuss methodological considerations in relation to notions of games as objects and games as processes. Doing so helps us point out that not all considerations relate to each type of research question.

CONSIDERING PLAY

When it comes to playing digital games, it does not hurt to more specifically elaborate on what actually constitutes "play". For the purpose of this article we are not talking about play in the most general sense of "free movement within a more rigid structure" as Salen and Zimmerman define it (2004, 304). More specifically we are talking about *gameplay*, play only occurring within games or "the formalized interaction that occurs when players follow rules of a game and experience its system through play" (2004, 303). For Juul, however, the notion of gameplay is a bit more complex. He argues that gameplay results from the interaction of the rules of the game, the pursuit of the goal by players (during which a player "seeks strategies that work due to the emergent properties of the game") and finally the player's "competence and repertoire of strategies and playing methods" (2005, 91). For methodological purposes, the last point is interesting as it relates to a degree of familiarity and literacy of games, which only comes from repeated

play over time, both of singular games and games in general. You take your experiences from playing a game – in the form of a repertoire of playing methods and strategies – and apply them knowingly and unknowingly to next ones. For Juul, this is "a quite overlooked aspect of playing games, that *a game changes the player that plays it*" (2005, 96, emphasis by author).

Gameplay therefore does not just involve playing games, but is a process that feeds itself: the more games you play, the better you understand them. This has potential implications for the types of research questions one can answer. In his discussion of player strata, Aarseth, for instance, mentions the "superficial play" mode where a researcher "plays around with the game for a few minutes, merely to make a quick classification and get a "feel" for the game" (2003, 6). Such an approach works best, of course, if you are already game literate enough to understand game genres and associated "feels". For a relative newcomer to games, superficial play might therefore not be enough to fully understand a game. It might require continued play and partial or even total completion, and maybe superficial play of some similar games to understand a game in its proper context. Similarly, for a player-researcher well-versed in games, playing games all the way to completion might not be necessary if the research question does not focus on the game as a whole, but rather on a specific element of it

The amount of time you will have to invest in a game, however, says little about play as a method itself. How you engage with games depends on some choices you can make beforehand. As some bigger games like MMORPGs or open world titles can be played in a seemingly endless amount of ways, one may want to adopt a heuristic approach to the game. In such a case, the player does not strive to exhaust all potential play styles and options, but rather goes through a bottom-up process of testing different hypotheses (if I do this, then I expect this to happen) to then let the outcome of that test determine the following action. Broadly speaking, we argue that players can let their further actions be informed by two different approaches. First of all, players can try

to take the route of least resistance and follow the game's lead. In such a case, we do what the game's formal components are encouraging us to do, so that we may progress through the game and achieve its goals. We term this strategy *instrumental play*. This type of play stands in opposition to a more unstructured type of play that we term *free play*. In this type of play, players are not playing to any set challenges or game objectives, but freely engage in the to-and-fro movement of play. The first approach we align most closely to the notion of games as object, whereas the latter can be seen in the light of games as processes.

Instrumental Play

One could argue that to make a claim about a game as a whole, one should try to perform all the different actions that a game makes available. We can call this an *exhaustive* playing strategy. This strategy relies on the idea that any argument becomes stronger if we can show it to be based on intersubjective characteristics of a designed system. One particular play strategy might yield interesting results and arguments, but these results and arguments are stronger when they take into account as many different play choices (successful and unsuccessful), and test as many different interpretations as possible. An example of this strategy can be found in Treanor and Mateas' proceduralist analysis of the classic arcade game *BurgerTime* (Data East 1982), where they try every possible way to play the game in order to arrive at a particular reading of what the game wants and means. Even a relatively simple game like *BurgerTime*, it turns out,requires a considerable amount of playthroughs to arrive at an exhaustive reading. However, as soon as we want to study a game like *Grand Theft Auto V* (Rockstar North 2013), it simply becomes impossible to perform all the different combinations of actions available. More so, many more contemporary games can change after release through patches and other software updates. This suggests that an exhaustive strategy is inherently limited, and it might simply be impossible beyond either very small games or very specific research questions to pursue such a strategy.

Alternatively, a more heuristic strategy seems more apt. For this purpose, we draw on Iser's notion of *instrumental play*, which he explains as a play form that aims for order and structure, and is thereby able to keep the more free form of play from moving away from its (undetermined) goal (1993, 237-238). In other words, instrumental play is a form of play that is goal focused and constrained to an ordering system. This idea of instrumental play shows similarities to the notion of an *implied player* discussed – though not necessarily advocated – by Aarseth (2007) who bases it on the implied reader, another one of Iser's concepts (1974). Aarseth argues that if we want to study the "expectations laid down by the game for the player", in other words, if we wish to focus on the formal characteristics of a game and the way it encourages certain play responses, we need to fulfil those expectations (2007, 132). This suggests that adopting the role of the implied player means performing those actions that lead to success in the game (or in terms of instrumental play: actions that are beneficial to achieving the target). It then becomes important to establish what the goal is and how the game is encouraging certain actions to be performed to achieve that goal.

To show how this instrumental play can come to inform more concrete methodological considerations we discuss three examples below: the gameplay condition, rational play, and cooperative play. First Leino argues that, on the basis of the game's materiality, success can only be defined as holding the ability to keep playing; successful actions consist of those actions that the game requires to continue the play session (2010, 120-162). The way that the game requires certain successful actions, which Leino terms the *gameplay condition* (2010, 133-134), then comes to inform one's heuristic analytical strategy. Secondly, Smith (2006) argues that for a rational player, success equals achieving the game's objective goals, which means that, as a method, rational play means performing those actions that are beneficial to achieving that objective. Finally, for van Vught (2016) success has a broader meaning and includes ludic success as well as constructing a narrative, or being able to see connections to other artworks or

the world beyond the game. In this case, our playing method becomes informed by a more general desire to cooperate with all the different cues a game gives us.

The gameplay condition

Using Leino's gameplay condition as a heuristic play strategy means that every subsequent choice the player makes is simply based on the desire to keep playing. This provides insights into the variety of possible play actions that do not lead to an eventual fail state but, more importantly, pulls the focus towards those formal game components that help to keep the player playing. By, for instance, comparing two erotic Tetris clones, Leino provides a good example of how the placement and use of the erotic content results in this content being either undeniable for the continuation of the play session or something superfluous (deniable) (2007, 117-119).

If we aim to use Leino's gameplay condition as an instrumental heuristic strategy in laying bare the more ludically essential formal components of the game, we need a relatively linear game of progression in which the designer yields strong control over what a player needs to do in order to progress in the game (Juul 2005, 72-73). However, in larger open world games with strong emergent properties (ibid., 73-82), a simple desire to keep playing can lead to an incredible variety of different play responses, which means that using this as heuristic strategy can only activate one of many potential playings, thereby turning the focus to the individual play session rather than the game's formal components. For example, in *Grand Theft Auto V* holding a desire to keep playing still allows us to choose the different missions and get caught up in a life of crime, or instead live out a more peaceful and somewhat mundane existence playing tennis, doing some yoga or watching in-game television. The latter strategy is easier in terms of gameplay, but doing so would not allow us to say anything about formal components important for progression in the game's designed narrative or the formal rules governing the game's

wanted level system. It does, however, allow us to reflect on the experience of performing mundane daily tasks in a "bad" virtual world that is continuously trying to lure us into a life of crime.

The rational player

As a second heuristic playing strategy that puts the focus on the game as a structuring system, we turn to Smith's model of a *rational player* (2006, 34). In this case, the player's choices are informed by the attempts to 'optimize his or her chances of achieving the goals' (ibid.). Here, Smith draws from economic game theory and argues that as long as we strive for those game states that are given a positive value by the designers, (i.e. "objective goals" (2006, 19) that we are meant to achieve from a designer's perspective) we are encouraged to perform a relatively limited set of in-game actions that connect to, and thereby also highlight the functioning of the game's rule-based formal components. In other words, as long as our every 'move' is informed by the desire to achieve the game's objective goals, we get to focus on the way that the game structures our behaviour through a dichotomy of positively and negatively valued content. This allows us to ask questions about the way that the game's rules encourage certain actions over others, which can lay bare interesting ideologies in the game's design.

For example, both Sicart (2009) and Zagal (2010b) have reflected upon the ethical dilemma created in the game *Manhunt* (Rockstar North, 2003) due to the fact that the game rules encourage or enforce players to perform morally abhorrent acts of violence. At first, it would seem that a rational player model does not lead to other actions than an approach informed by Leino's gameplay condition. After all, as Sicart puts it, 'there is only one way of winning the game, and that is to comply with the instructions given in the fictional world and commit these acts' (2009, 52). However, the game also offers the player the option to perform the acts in three levels of 'gruesomeness' each rewarding a higher score thereby making it an (added) objective goal. By adopting

the role of a rational player one would then base every subsequent action on the desire to maximize the score and perform the most gruesome executions. This results in a situation where, as Zagal puts it, the player is "forced to confront the act of being a successful player as a moral dilemma itself. […] How far are you willing to go, as a player, in carrying out the executions?" (2010b, 241). What Zagal aptly notes here is that, as long as we assume the player to be a moral being (a relatively virtuous one that denounces gruesome executions), being a rational player in *Manhunt* also triggers an ethical dilemma about being a rational player. In other words, it is only by trying to achieve *Manhunt*'s objective goals that we can start to question the moral validity of those goals and our actions towards them.

The cooperative player

A third and final instrumental heuristic strategy we discuss here can be found in van Vught's conceptualization of a *cooperative player* (2016). Here cooperation occurs between the player and the game (rather than between players) in the sense that the player follows the game's cues to come to an activation of the game that is "appropriate" on the basis of the functioning of the game's formal components (2016 186-192). He argues that following a game's objective goals can indeed lay bare those elements that are ludically important – in the sense that they "facilitate the player's rule-bound, goal directed progress in a game" (2016, 85) – these strategies do not help to focus on formal elements that have more dominant non-ludic functions (2016, 192-198). For example, to also disclose formal game elements that play a crucial role in the unfolding of the game's narrative, formal elements that play a role in having the player appeal to notions of a real world beyond the game or to other cultural artefacts, and formal elements that play a role in contributing to the game's overall abstract artistic shape, one needs to adopt a strategy that does more than play towards success. Here, van Vught returns to Iser's implied reader and argues that the 'predispositions laid down (…) by the text' (1978, 34) that a player should adopt in order for the text to exercise its

many (not just ludic) effects should not just include a desire to optimize our chances of ludic success/progression. It also requires the skills and appropriate background knowledge to construct a narrative, draw from relevant contexts including related cultural artefacts, and to evaluate the game for its overall artistic shape (2016, 196). Approaching gameplay in this sense also immediately connects it to broader contextual factors that we will discuss more thoroughly below.

Practically, the strategy helps to focus one's analysis towards those formal elements that are the more crucial ones in all five categories: ludic, compositional, realistic, transtextual and artistic. This means that cooperative play can not only help to distinguish between more and less important elements for ludic progress (e.g. main quests from side quests), but also allows for distinguishing between those components more or less crucial to the game's plot development (e.g. certain cutscenes over others); those more or less crucial for the overall realistic quality (e.g. when sound helps to create the sensation of a 3-dimensional space); those more or less crucial for the game's transtextual references to other cultural artefacts (e.g. Donkey Kong's similarities to King Kong), and those components more or less crucial for the overall artistic shape of the game (e.g. the visual characteristics of *MadWorld* (PlatinumGames 2009) or the 'bullet cam' in *Max Payne 3* (Rockstar Studios 2012)).

Free Play

While the above instrumental approaches provide specific takes on how to play games to understand them as objects, they are not necessarily all best-equipped to understand them as processes. Another way to frame this is that while more instrumental approaches are, as Aarseth rightfully points out, "sufficient to understand the expectations laid down by the game for the player" (2007, 132), they do not tell us much about the many other ways in which a game can be activated. Here we again draw on Iser who coined the term free play to focus on the unrestrained boundary-

crossing to-and-fro movement of play which has a tendency to move away from a goal-directed path (1993, 236-237). In this section we thus let go of the idea of an implied player, and instead engage more freely in play: not just following but exploring, pushing, bending, deviating from and transgressing the intended playing paths – not just "playing" but "gaming" a game. While we should avoid a bias in our research towards "the statistically marginal subversive or truly innovative play styles" (ibid. 131), from a method perspective, taking an approach which deviates from dominant play styles might just yield new insights. In fact, they lead to understandings of the game and/or its culture of play which could not have been achieved otherwise.

To show how free play fits within methodological considerations, we distinguish between three forms: exploration, transgressive play, and going native. As with instrumental play, these three forms are to be seen as a starting point to think about free play as method, not as an exhaustive list. These free forms of play can occur on a scale from behaviour that is facilitated and anticipated by the designers, to behaviour which actively seeks to test boundaries and even create new rules and forms of play. With free play, we arguably come closer to understanding what Aarseth would call "real player behavior" (2007, 132) since players often do things in games which go beyond the game's primary goals. Although it is not our intention here to move away from studying the game to a study of players, the fact that real players often do widely different things, does have consequences for the claims we can make about the meaning of a game or the experiences that it affords or yields. It is often only when we engage in free play that the processual nature of the game becomes apparent, resulting in different forms of meaning-making and associated research questions and approaches.

Exploration

A key characteristic of games is that they afford exploring both ludic strategies as well as fictional dimensions (if present) beyond

the intended or primary playing paths, resulting in an almost endless range of potential playings. A game might have more solutions to problems and a player might experiment with different, more creative and unexpected approaches for progression. Players wander off the most clearly sign-posted paths in a virtual world, not to finish a quest or seek the next part in the storyline, but just out of sheer curiosity about what lies beyond. Exploratory play presents, as Raessens puts it, "the actualization of something that is virtually, in the sense of potentially, already available as one of the options, created by the developer" (2005, 381). It is an actualization of the game which, while afforded by design, is the result of a player's creativity and interest.

As a methodological approach, explorative play yields different results from simply following intended or dominant paths through a game. For some game genres like adventure or role-playing games, exploration is not just optional but an integral part to the overall experience. As Fernandez-Vara puts it, they "thrive on allowing players to explore the world in their own time, or at least give room to gather information, and even learn from trial and error" (2016, 234). Here, following a purely instrumental approach provides only limited insights into the game as a whole.

By taking specific explorative approaches, a researcher can reach new understandings about how games operate and how we could investigate them. Miller, for instance, approaches single-player open world games like an ethnographer, and describes her visit to *Grand Theft Auto IV* (Rockstar North 2004) as fieldwork where she encounters and observes non-player characters as inhabitants of a world. As such, she argues, gameplay becomes more like in-game tourism, which, among other things, refocuses the role of the avatar and its place within the game world (2008). Explorative play can therefore provide insights into the kinds of play a game affords, but also what it inhibits. Actively looking for non-violent or non-lethal solutions in otherwise action-oriented games, such as the action-adventure genre, signal the various ways in which games deal with violence and associated ethical considerations

(see Glas 2015; Jørgensen 2015). Using a self-imposed rule of permadeath, where having your character die means restarting the entire game, Keogh made a playthrough of *Minecraft* (Mojang 2011) into an experience with unexpected narrative weight (2013).

Transgressive play

Another free play strategy is transgressive play. Like explorative play, transgressive play diverges from a game's intended or dominant repertoire of actions. Here, however, it usually involves creative use of game mechanics or exploitation of bugs that "would in most cases have been rendered impossible if the game designers could have predicted them" (Aarseth 2007, 132). Depending on game type and platform, such play activities, when discovered, are indeed rendered impossible through software updates. But sometimes, particular forms of transgressive play become so widespread and popular that they become formalized as part of the "intended" experience within the rules of the system or newer iterations of that system, like with the strafe-jumping technique in first-person shooter *Quake* (id Software 1996). In such a case, we can even speak of "transformative play", where "play doesn't just occupy and oppose the interstices of the system, but actually transforms the space as a whole" creating new game practices or even new games in the process (Salen & Zimmerman 2004, 305). Whether unwanted or transformative, transgressive play can be considered as "a symbolic gesture of rebellion against the tyranny of the game, a (perhaps illusory) way for the played subject to regain their sense of identity and uniqueness through the mechanisms of the game itself" (Aarseth 2007, 132). This once more shows that games are not stable objects, but under constant negotiation by its players.

Transgression can also translate itself into method, for instance in the form of cheating, a term which, in relation to research, immediately sounds problematic. Conventionally, cheating should not be seen by researchers as a way of circumventing playing a game, at least not according to Aarseth. Cheaters, he argues, are

certainly present among game scholars, but cheating researchers "cannot be expected to reach a deep understanding of the games they examine" as cheating takes away a game's challenges (2003, 7). As Karppi and Sotamaa have already pointed out, by approaching cheating this way, Aarseth seems to indicate that there are good and bad ways to play games, and that by doing so he "at least implicitly claims that the researcher also needs to be a good player" (2010, 63). In their analysis of *DJ Hero* (FreeStyleGames 2009), which like many games has built-in cheat codes and player-created cheat programs and guides, they are quick to point out that the presence of cheats "indicate that 'playing' is […] far from a rigid construct" (ibid.). In fact, cheating is an important part of game culture, where constant negotiations occur about what constitutes cheating. What is cheating for some is entirely acceptable behaviour for others (see Consalvo 2007).

Karppi and Sotamaa then point to Kücklich, who suggests that cheating can actually be a worthwhile pursuit for a researcher because it "allows us to reflect upon the presuppositions that we bring to games, (…) enables us to identify blind spots in our research, and thus discover new avenues of inquiry (…), [and can] help us recognize flaws in our theoretical models, which are so often built upon the experience of playing by the rules, rather than breaking the rules" (2007, 357). By using a rubber band modification of the *DJ Hero* hardware (to pull the crossfader slider back into a central position), Karppi and Sotamaa for instance highlight "a whole culture of services around the game whose potentiality is actualized only when we exit the structure and the rules of the game" (2012, 425). In other words, this cheat allows them to reflect on the participatory culture around the game and the way it is transforming gameplay.

Transgressive play can also come in forms other than cheating. As Meades (2015) notes, transgressive play, or what he chooses to term counterplay, is not just defined by its working against the coded game rules, but also against more socially negotiated play etiquette, or it enters the grey areas regarding Terms of Use

or End-User Licence Agreements. Dibbell, for instance, started a year-long effort to make a living trading virtual currency for real money within the MMORPG, *Ultima Online* (Origin Systems 1997), engaging with the genre's virtual economies and real-money trade. In doing so, Dibbell lays bare the problematic relationship between play and work in these types of games (2006). Similarly, Myers (2008) conducted a series of social experiments in the MMORPG,*City of Heroes/Villains* (Cryptic Studios 2004-2012), where he played purely according to the game's rules thereby breaching social conventions of the player community, which led to him being ostracized. Not only did this allow Myers to study the relationship between those rules governing the game system and those rules governing the game society, but it also shows how following the rules in multiplayer games can sometimes be a form of transgressive play.

Going 'native'

The phrase "going native" within sociology is linked to participant observation and is often linked to concerns of losing objectivity by becoming too involved with a group or culture under investigation. We argue, however, that from a humanities perspective, a more subjective experience is not just acceptable, but unavoidable as, to quote Aarseth, a playing game scholar "is a necessary but uncontrollable part of the process of creating ludic meaning, a function that is created by the gameplay as well as co-creator of it" (2007, 131-132). To explain that "going native" as a methodological approach goes a step further than merely paying attention to the more personal nature of play (which is discussed more in depth below), we can point towards a methodological discussion raised by Bartle concerning play as a method.

For Bartle, the repertoire knowledge and experience gained by playing a lot of games is essential in relation to the time investment needed to understand a game. In his view, game researchers following fixed methodological approaches might even put too much time in games if they already have the appropriate literacy

and competence. He argues that "[i]f you, as a Game Studies researcher, study game after game after game, eventually you'll reach the same point that game designers reach: you'll merely have to read the manual to know what a game is going to play like" (2010). At this point, you will "grok" a game – an intuitive understanding of a game's concepts. Playing games all the way through every time therefore results in "swiftly diminishing results" (ibid.). With enough ludoliteracy under your belt, it is indeed possible to reach conclusions about a game's design earlier than other less-literate researchers. This view does seem to understand games primarily as objects, with the focus primarily on its design. Putting too much focus on play as a method within game studies, Bartle argues, might even rob scholars of their ability to enjoy play (ibid.).

Prolonged, expert play of singular titles produces more than just an understanding of a game's basic design concepts. In order to understand the affordances for learning in games, Hock-koon, for instance, trained for six months to become a "supergamer" able to perform a one-credit run on an *Alien Vs. Predator* arcade game (Capcom 1994). By doing so, he was able to pinpoint how game mechanisms relate to understandings of mastery over a game (2012). Investing a lot of time into a game also brings one closer to the experience of regular players, especially those heavily engaged in online multiplayer games. With titles popular in eSports, it provides insights into the so-called "meta" of game-transcending strategies. This can indeed mean a lot of repetitive play but, as Glas points out in relation to MMORPGs, "at moments where play seems to become repetitive and intuitive rather than challenging, players are more prone […] to engage in devious, transgressive or otherwise divergent play practices" (2012, 175). In his research on the *World of Warcraft*'s complex participatory culture, he points out that many of the often highly transformative play practices of players are "born from the interplay between boredom and fun", adding that to truly understand why players engage in unexpected or unorthodox play practices "grokking a game as a researcher can be as valuable as playing it for the first time" (2012, 176).

Within MMORPGs we can also start to understand the many practices players engage in, like game world exploration, griefing, powerleveling, role-playing, the creation of user-interface modifications, machinima videos or other creative productions (cf. Taylor 2006; Corneliussen & Rettberg 2008; Chen 2012). And with understanding here, we mean not as an outsider looking in, but as a true insider: fully engaged in these activities and able to understand a MMORPG as an object in which meaning is not fixed but under constant negotiation.

CONSIDERING CONTEXT

Aside from the fact that different strategic choices highlight different parts of a game experience, it also matters for our signification processes what background knowledge we bring to the game. A game does not exist in a void, but is part of a large and complex (media) environment in which it has its own medium-specific characteristics, genres, history and industry practices. As explained earlier, these are sociotechnical phenomena. As Fernández-Vara points out, merely looking at a text while ignoring the circumstances of its production and play "overlooks aspects that may be essential to understand the text" (2015, 14). At the same time, games are also sociocultural in nature. How we play and understand them is influenced by our sociocultural baggage and, if present, repertoire knowledge about games. In this section we therefore discuss how this context can, and in cases should, be taken into consideration when playing games for research purposes. We subdivide this section into two parts which, again, relate to the distinction between game as object and game as process. In the first part, we discuss the context of the game – the aforementioned circumstances of production – while in the second part we focus on the situated nature of the player-researcher and how this matters in terms of our methodological considerations.

Putting a game in context

The context of a game can mean many things, and it is here that a researcher also needs to decide upon those elements which are of most importance for answering a research question. As Zagal points out, to be able to derive meaning from games means having "the ability to understand games as the ability to explain, discuss, describe, frame, situate, interpret, and/or position games" in their proper contexts (2010a, 24). Being ludoliterate means being able to place a game in the context of human culture (including the relation with other media); in the context of other games (including genre); and the context of the technological platform on which games run (ibid.). Fernández-Vara adds even more specific contexts, like the economic context, a game's specific production team, and its audience (2015, 59-60). While it is impossible to discuss all potentially relevant contexts here, a few examples might help to understand games as objects born from and existing within certain cultural, historical, technological and other contexts.

Take a game like *Gone Home* (The Fullbright Company 2013), which offers an experience that relies heavily on existing narrative competencies of its players. The game presents what Jenkins calls an "evocative space" by drawing upon pre-existing genre traditions (2004, 123), in this case the horror genre, to trick the player into initially believing they are entering a house where something terrible might have happened – something terrible might even still be present. Being able to understand the game's design as part of a burgeoning new genre known by the somewhat contested moniker "walking simulator" (Irwin 2017) might also help in understanding *Gone Home*'s aesthetic choice of placing narrative before challenges. Also, a game like *Pokémon Go* (Niantic 2016) is best understood in relation to its genre roots in pervasive games (cf. Montola, Stenros & Waern 2009). As *Pokémon Go* is a so-called free-to-play game, understanding the game's design also requires some insight into the underlying monetization model of free-to-play games and how this economic

context has shaped the contemporary gaming market on platforms like the App Store for Apple's smartphones (Nieborg 2016).

The platform on which games run does not just form an economic context, but also very much a technological one. In the example of *Pokémon Go*, smartphones offer the location-based technology needed to create its augmented reality experience. Head-mounted displays like the Oculus Rift also offer very specific gameplay experiences, in this case related to "virtual reality" experiences. Some games, however, are released both on more traditional platforms like a gaming console or PC and on these new VR devices. Playing a game like *Superhot* (Superhot Team 2016) on an Xbox One yields a very different experience than on an Oculus Rift where you can actually use your full body to dodge bullets and swing weapons around. Taking the platform into account therefore matters, as experiences can differ considerably between them. As Zagal points out, "videogames are implemented on technological platforms that shape both the form and functionalities and experiences they can offer" (2010a, 32). The fact is, Montfort and Bogost remind us in their overview of what platform studies should look like, "a computational platform is not an alien machine, but a cultural artefact that is shaped by values and forces and which expresses views about the world" (2009, 148) and as such should be taken as serious as the games played on them. While not every research project might need to fully engage in an in-depth study of the underlying platform, being aware of this technological context matters as it plays an important part in shaping the gameplay experience.

Putting oneself in context

Aside from acknowledging the various contexts of a game, it is also important to acknowledge one's own context as a researcher at play. As a researcher, one may first be tempted to strive for an approach that is as objective as possible. A way of playing that may activate the game in a certain way, but nevertheless keeps a critical distance towards the object during that activation process.

However, as a researcher studying games (as is the case with many other objects), downplaying or obscuring oneself becomes problematic since, as we noted above, the researcher is inherently caught up in the object of study.

Here, the distinction between those considering games as objects and those considering games as processes, surfaces again. When we're interested in games as objects we may try to bracket off personal preferences as much as possible to come to an experience that can be seen as closely connected to the materiality of the game as object (see Leino's (2010) gameplay condition). But when we're considering games as processes we're more inclined to embrace the indeterminacy of the text and see any personal experience as a valid contribution to our understanding of the text. Also in the latter case, however, we still need some methodological rigor and show where our personal experiences come from. In other words, we need to acknowledge our position as both researchers and players and reflect on our how our cultural, social, economic and historical situation feeds into our understanding of the game as process. Here Lammes offers two important considerations.

First of all, by drawing from Boelstorff's ethnographic approach and his acknowledgment that a researcher is always a participant in the culture that she or he is trying to study (2006), Lammes argues that also scholars studying games as texts should be reflexive about their dual role as researcher and players (2007, 28). This *reflexivity* helps us to be open about the unique position that we are in when we're playing for analytical purposes rather than, or in most cases in addition to playing for pleasure. As Fernández-Vara puts it, "the sheer fact that we are tackling games systematically and critically sets us aside from most other players" (2015, 28). Given the fact that play is often seen as intrinsically purposeful and that any added benefit like prizes or indeed analytical gain should become secondary to the primary purpose of play (what Apter (1991, 16) calls paratelic), a more "utilitarian" analytical way of playing (Mäyrä 2008, 165) impacts the type of claims that we

can make. So, if making general claims about possible other play experiences on the basis of one's own experience was not already problematic enough, it becomes all the more problematic if we consider that our play experience as a researcher is in fact anything but the play experience of the "average" gamer. Being reflexive about our role as researchers at play thus keeps us from making universal knowledge claims, and forces us to further explore the consequences of our academic gaze.

A good example of reflexivity at work is Jenkins' (1992) conceptualization of the "aca-fan". The aca-fan is a portmanteau of an academic with access to and knowledge of scholarly resources and methodological rigor, and a fan with access to the fine-grained knowledge of the object of the fan's admiration. While approaching a research object as an aca-fan may at first seem like a best-of-both-worlds option, the idea has been criticized for the fact that taste has become too much of a determining factor in the types of texts that we do and don't study, as well as for the lack of scepticism in fans which may be important to attain analytical depth (e.g. Bogost 2010). As Bartle puts it in the form of a question: "If researchers are writing in the light of their experience as players, isn't there bound to be an unhealthy correlation between what they find fun as players and what they regard to be significant as researchers?" (2010). On the other hand, Jenkins' introduction of the concept also seemed to specifically address any idealized vision of academic scepticism (or worse, objectivism), arguing that fans can also be highly critical of the media they love (for instance when a beloved series keeps using racial or gender stereotypes) (Jenkins, McPherson, Shattuc 2002, 6-11). However, whether one is either positive or negative about the combination of being an academic and a fan, the point here is that one should be reflexive about it. We should be reflexive about the way it may have steered our analysis towards certain objects or components. We should be reflexive about our love for or distaste of the object of study. And we should be reflexive about the way that the involvement with or distance from the object could potentially impact our findings.

The aca-fan also brings us to Lammes' (2007) second consideration: *situatedness*. In a similar way that the self-reflection of an aca-fan makes for more subjective and autobiographical writings, so should any gamer be open about the socio-economic, cultural and historical situation in which she or he exists and encounters the game. While Lammes only gives one small example of research pertaining to this category of situatedness, we would argue that there is now a strong tradition in game studies that acknowledges and highlights the researcher at play as a subject existent and playing in a specific context. Not only can those pieces be found in more informal blogposts such as Costikyan's criticism of *September 12th* (Frasca 2003a) from the position of a 9/11 survivor (see Bogost 2006, 131-132), but also in academic articles such as Frasca's (2001) analysis of *The Sims* (Maxis 2000) or his analysis (2003b) of *Grand Theft Auto III* (DMA Design 2001). In fact, as Fernández-Vara notes in her discussion of the "personal account" (2015, 210-215), this situatedness also seems to be the core characteristics of New Games Journalism: a kind of journalism akin to the highly subjective gonzo journalism popularized by Hunter S. Thompson. As Gillen puts it in his manifesto, New Games Journalism "argues that the worth of a videogame lies not in the game, but in the gamer. What a gamer feels and thinks as this alien construct takes over all their sensory inputs is what's interesting here" (2004, see also Rossignol 2008). From a New Game Journalist perspective, such a personal telling is preferred over the notion that game criticism should be a pursuit of objectivity (see also Foxman & Nieborg 2016) thereby showing itself to be on the processual side of the object-process continuum.

CONCLUSION

In this paper, we aimed to provide an overview of the various methodological considerations we may have as researchers at play. We have argued that such considerations should *precede* the actual analysis of games, as making choices in the approach to playing

enables and affords certain types of analysis, while at the same time making other types of analyses less feasible. As such, this work should be approached in congruence with literature that focuses more specifically on textual analysis of games as a methodology such as Carr (2009), Bizzochi and Tanenbaum (2011), or Fernández-Vara's comprehensive handbook on the topic (2015). Here, more detailed approaches and frameworks for the study of games as texts can be found.

However, when performing such a textual analysis, a fundamental underlying question that remains to be addressed, concerns whether or not we aim to study games as objects and/or as processes, as this implies a play style that matches this ontological starting point both in terms of strategic choices and contextual considerations. An overview of how the various considerations connect can be seen in the figure below. While this overview might seem orderly, we want to keep on stressing that various parts are not meant as mutually exclusive opposites, but should be seen as overlapping and fundamentally intermingled. The goal here is to show how methodological considerations relate to rather than exclude one another even if, in the end, a particular research emphasis also leads one to consider certain choices and contexts more than others.

	Considering Play	Considering Context
Games as object	Instrumental play – Gameplay condition – Rational play – Cooperative play Free play	Game Context – Sociocultural – Genre – Technological – Economic
Games as process	Player Context – Exploration – Transgressive play – Going native	– Reflexivity – Situatedness

Figure 1: Relations of methodological play considerations as discussed in this paper.

When engaging with games for a research project, one should be able to better understand the type of play that is more appropriate, as well as the time investment and game literacy needed to be able to fully and fruitfully engage with one's question. In a classroom

setting, the latter considerations are especially noteworthy as, in our experience, students who are not too familiar with games tend to come up with research questions that they will not be able to answer. From a play as method perspective, a student can start with a few basic and often even pragmatic questions. If a game which has already piqued your interest is your starting point, you can ask what kind of research questions are actually viable based on your existing repertoire and contextual knowledge, as well as the amount of time that can be invested in the research itself. Starting with a specific research question or from a specific theoretical framework, you can ask whether or not this requires an object or process-oriented approach and, with it, a play approach which focuses on intended design structures or more subjective, situated experiences. Being able to answer such questions and reflecting on methodological choices before and during play will ultimately turn the play process into a more effective and well-considered part of one's research.

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