

Memory Machine

Exploring Memory Culture in the Interactive Digital Space

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AMCHA Deutschland e.V. Kopenhagener Str. 45
D-10437 Berlin

Written by:
Lucas Bödeker, Eberswalde
Carlo di Paolo, Berlin
Max Bredlau, Berlin

Editing: Rebecca Fischer, Kiel
Production and design: Max Bredlau, Berlin
Image editing: Max Bredlau, Berlin
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TEAM



Lukas Welz

Lukas Welz, M.Sc., was born in Berlin in 1986 and has been the chairman of the board of AMCHA Germany e.V. since 2012. His topics include transitional justice and compensation for Nazi injustice.



Sebastian Stamm

Sebastian Stamm was born in Naila, Upper Franconia in 1983. He lives and works in Berlin as a game designer, illustrator, and comic artist. Since his childhood, he has been interested in machines, robots, and strange imaginary characters.



Helena Schätzle

Helena Schätzle, born in 1983, studied Visual Communication with a focus on Photography at the Kunsthochschule Kassel. For years, she has undertaken extensive travels to various countries where she works intensively on photography projects.



Carlo di Paolo

Narrative & Game Design



Max Bredlau

Project Management, Level & Game Design



Lucas Bödeker

Technical Game Design & Code



Christopher Bukal Chilicuisa

3D Art & Look Development

Chapter 1

Foreword

In the spring of 2021, an old friend and fellow student, the photo artist Helena Schätzle, contacted me with a project idea on the topic of overcoming trauma and the Holocaust. Helena had already accompanied survivors of the Shoah for several years, worked with them and completed the photographic work “Life after Survival” with them. The book was developed in close cooperation with the association AMCHA e.V. and its chairman Lukas Welz. Helena and Lukas had the idea to use parts of the book and the research material for an interactive computer game.

The topic of the Holocaust trauma of the survivors, their coping with it and the transgenerational trauma of their descendants was to be interpreted in a completely new way and made easily accessible to a broad audience, especially in teaching. In the spirit of Helena Schätzle's photographic work, the game's objective was to make trauma visible.

Such an exciting but also ambitious project request is relatively rare. After several video calls, all of which had to take place in the spring of 2020 - i.e. during the early days of the Covid pandemic - a two-part project plan took shape.

The game was to be implemented both as part of a course module at the University of Europe for Applied Sciences, and as a stand-alone project with funding.

The former course, Memory Machine, started in the winter semester of 2020, and formed the thematic foundation of the project, with plenty of room for experimentation, iteration, and development of crude prototypes. This course on trauma and trauma recovery, taking place entirely digitally and during a global pandemic, demands a lot from all participants and has been unique in intensity so far in my academic time.

Despite all adversities, the majority of the students did not let themselves be deterred, so that in the end 4 prototypes and a lot of research work came together in this phase of pre-production.

After that, the production of the game prototype started, funded by the Foundation EVZ and supervised by a variety of experts, with the core team consisting of Lucas Bödeker (Technical Game Design & Code), Carlo Di Paolo (Narrative & Game Design, Game Art) and Max Bredlau (Project Management, Level & Game Design). In the second half, the team was also actively supported by Christopher Bukal Chlicuisa in the area of 3D and look development.

On 01.12.2021 the prototype was finished. The game is embedded in a website to be platform independent and easily accessible. Any user can easily access and explore the content via web browser. The final prototype tells the story of a woman growing up in the Polish town of Oświęcim.

Gradually, the city is swallowed by the events of World War II and the Holocaust, parts of Oświęcim become concentration camps. In simple interaction, players move through the plot and gradually discover it for themselves. By means of a very intuitive mechanism, and importantly with careful use of little text, the player discovers the historical built-

ding blocks of individual fates and places at their own direction and pace.

In the end the player sees three contemporary witnesses, living in other countries in three different situations: with family, with help by institution and alone. The spectrum and dealing with trauma as the key to coming to terms with it.

An in itself obvious, but in the post mortem after the completion of the prototype even more daunting realization, was the complexity and dynamics of all elements involved during the development.

It is a great challenge to narrate and present such a monolithic subject appropriately, at the same time easily accessible but also respectful, playful - but not pretentious, abstract but also tangible and involving in a medium.

In the interactive medium of computer games, where there are still comparatively few similar games and much still needs to be explored and imagined, this undertaking is exponentially greater.

Within nine months, the team has nevertheless succeeded in illuminating the topics of trauma and the Holocaust in a completely new and appropriate way.

Memory Machine doesn't fall into the trap of a bad serious game that comes across as too stodgy, overstuffed with text and irrelevances in terms of gameplay, scaring players off after a short time. The prototype focuses on the interactive and narrative, the flow of the game, and makes the player a self-determined discoverer of an action that is by no means an active simulation of an atrocity, but rather the experience of an empathetic story.

Many thanks to all those involved,

Lukas Welz - Board of Directors Amcha e.V.

Helena Schätzle - photographer and artist

Members of the advisory board

Prof. Awi Blumenfeld
Dr. phil. Maria Böttche
Benjamin Fischer
Sarah Hüttenberend
Prof. Anat Katsir
Dr. phil. Tobias Ebbrecht-Hartmann
Dr. Richard Rongstock

Foundation Remembrance, Responsibility and Future
Malte Switkes vel Wittels - Senior Project Manager

iRightslab

Anne Lammers

Sartre High School

Dr. Heike Gerber - for her expert advice and facilitating a real test environment
Pia Zielke - Playtest Coordination and has made available teaching time

Special thanks also to Asi Burak for his expert advice.

Thanks to all involved,

for allowing me to be a part of this project,

Chapeau,

Prof. Sebastian Stamm

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Chapter 2

Preproduction

The way we worked on the project was purposefully unconventional and experimental in some respects and offered us developers more freedom than is common for this kind of work. It was up to us to engage with the topic of memory and trauma ourselves and develop something out of them. What emerged is The Memory Machine, an exploratory prototype whose development we present below.

Combining memory culture with games is a movement that has seen great momentum in recent years. Using games to make difficult topics accessible in new ways, especially to a young audience, can create fresh perspectives and help keep the culture of remembrance alive and enriched. The idea gave rise to this project, which was funded by "evz digital // memory", as part of the "Erinnern mit Games" initiative and in cooperation with the AMCHA association. The goal was to develop a game that deals with the topics of National Socialism and the Holocaust, with an intensified focus on the traumas that occurred during this time and their effects on the descendants of those affected. The main intention for the final product was for it to be usable by teachers for classroom instruction in schools.

In- game screenshot



Experts Opinion: A story of decisions

Dr. Tobias Ebbrecht-Hartmann
Department of Communication & Journalism
The Hebrew University of Jerusalem



How much game can memory take?

The memory of the Shoah, the attempt to completely murder all Jews in Europe, stands today at a challenging threshold of time. On the one hand, there is the question of how the history of the Holocaust can be conveyed to new generations, now that only a few survivors of the National Socialist crimes can personally recount their experiences. At the same time, the comprehensive digitalization of our learning and living worlds leads to new forms of mediation that must be increasingly considered with regard to remembering and learning and teaching about the Shoah. This concerns not only the preservation and use of digitized sources and the development of digital formats for teaching history, but also changing practices of telling history and dealing with the National Socialist past.

In this context, the concept of "gamification" has become a controversial buzzword. This concept describes the use of playful elements in non-game contexts. The aim is to increase the motivation of the participants, especially in learning environments. Therefore, gamification features that obey performance principles, such as ranking lists, high scores, or virtual possessions, are often adap-

ted. This idea of performance and competition associated with gamification is criticized from many sides. In the context of games, however, explorative elements, e.g., independent search, decisions, and the assumption of different roles (perspectives) can also be considered elements of gamification, the goal of which, however, is a more intensive engagement with the respective topic. In the context of the debate about new ways of dealing with National Socialism and the Shoah, however, the focus is usually less on what exactly lies behind the concept of gamification than on concerns about trivializing the "civilizational rupture Auschwitz" when it is made the subject of playful engagement.

However, at least when it comes to the discussion of digital games and the memory of the Shoah, most of the participants have products from the culture-industrial entertainment sector in mind, for example the World War II game Call of Duty, or the first-person shooter Wolfenstein. Both games are significant in that they make it clear that references to the Shoah, especially the reference to iconic images and symbols ranging from swastikas to concentration camp architecture and barracks to tattooed prisoner numbers, have long since become part of the fictional worlds of computer games. However, the treatment of the topic in commercial games is still rather characterized by tendencies to decontextualize history, as well as to reduce complex historical contexts to stereotypical images and motifs.

In recent years, however, a growing number of digital games have been developed that attempt to approach the history of the Shoah, National Socialism, and World War II in a different way than the popular blockbusters from the entertainment segment. Under the heading of "serious games," a computer game genre has emerged that attempts to adapt the characteristic approaches of digital games - gamification and interactivity - for dealing with difficult topics. As such, games are described as having been developed for purposes other than mere entertainment. Certain tasks are designed with the application and further development of knowledge in mind and aim at activation and the conscious handling of decisions, as well as the activation of curiosity and research interest. In serious games, these knowledge complexes are conveyed in a

manageable and delimited form. With regard to the thematic study of Shoah and National Socialism, for example, the games *Attentat 42* and *Svoboda 1945: Liberation*, developed by the Czech company Charles Games, should be mentioned. These games narrate specific historical events from the Czech occupation and liberation history with the help of personalized stories that interweave animated graphic novel sequences with various source genres such as (reenacted) interviews with eyewitnesses, allowing the players to adopt different perspectives on the historical events without being able to change their course. The games combine forms of digital storytelling with interactive game elements and historical settings developed together with historians. During development, questions of use in history lessons and in historical education work were also considered.

The digital game development project *Memory Machine* also follows this tradition. It is an explorative prototype that gives players the opportunity to explore the past on the basis of a very specific location and the stories associated with it. The central structure of the game, which is both interactive and narrative, is based on puzzle mechanisms that motivate the players to make their own actions and decisions and thus guide them through the events and consequences of the Holocaust.

Digital Memory at the UE Germany

The first conceptions of the game were created in the classrooms of the University of Applied Sciences in Berlin, in the winter semester of 2020. Under the supervision and with the help of Prof. Sebastian Stamm, the students of a university course called *Digital Memory* first reflected on the topics of memory and trauma. The focus lay on the possible effects that traumas of Holocaust survivors continue to have on their subsequent generations.

In the second half of the course, students developed different concepts for games, with the intention of approaching this topic in a new way and encouraging discussion. These were to serve us in the development team as the basis for the prototype, which was later named *The Memory Machine*.

We hoped to get different ideas and new perspectives on the topic from the students to incorporate into our work. To that end, we tracked the students' progress and provided regular feedback and assistance to carve out the essences of the challenging designs in a short period of time. This resulted in many concepts, such as the *Causaffectus* project, which focused on creating a mood, rather than a factual reenactment of events, through artistic reinterpretation of Holocaust survivors' memories, or *AI Collective*, which addressed

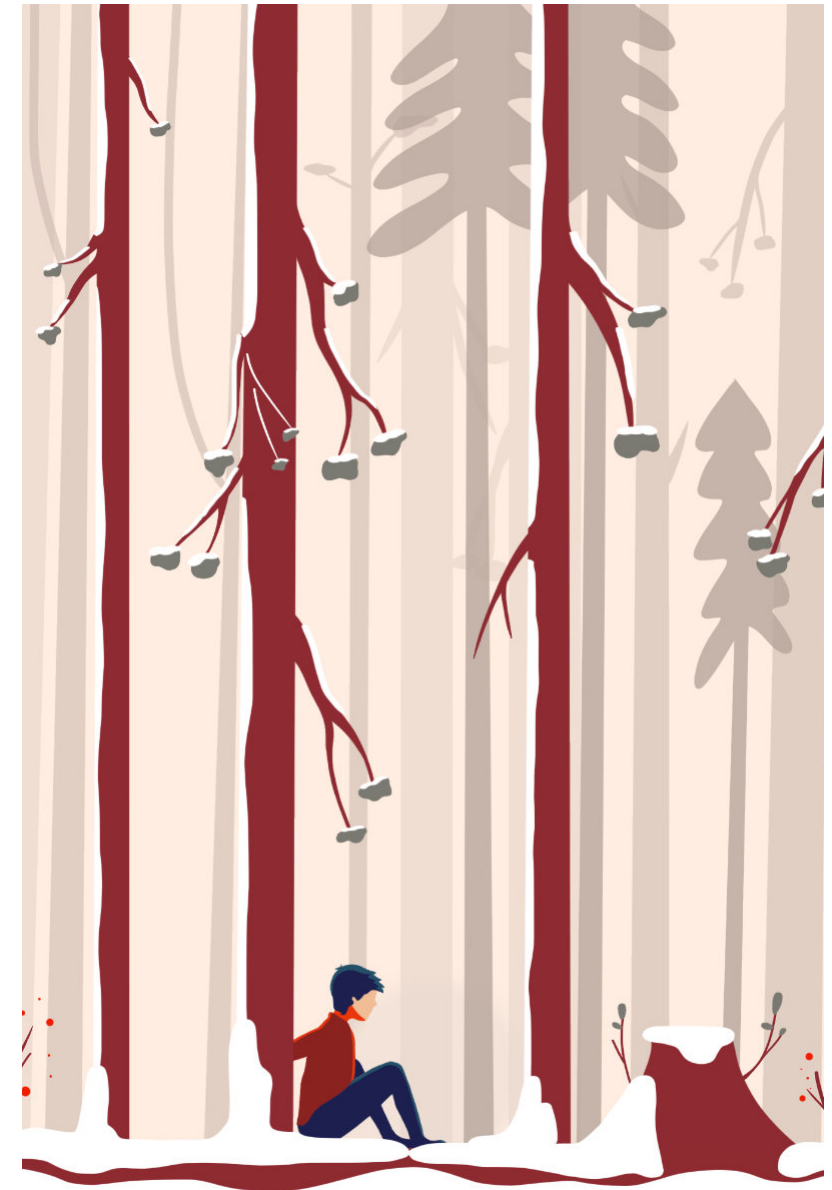


Screenshot from the prototype Causaffectus

the players' empathy through the interaction with a fictional companion.

The concepts with the greatest impact on our prototype were Essence of Souls and Reminisce. The core of Essence of Souls was to present snippets of the memory of a Holocaust survivor as an atmospheric episode. In Reminisce, on the other hand, the memories were presented in a mini-game-like manner, thus actively involving the end user in the telling of the story.

Even though we did not directly implement any of the students' projects, the considerations they contained helped us map the landscape of possibilities.



Screenshot from the prototype Essence of Souls (right)

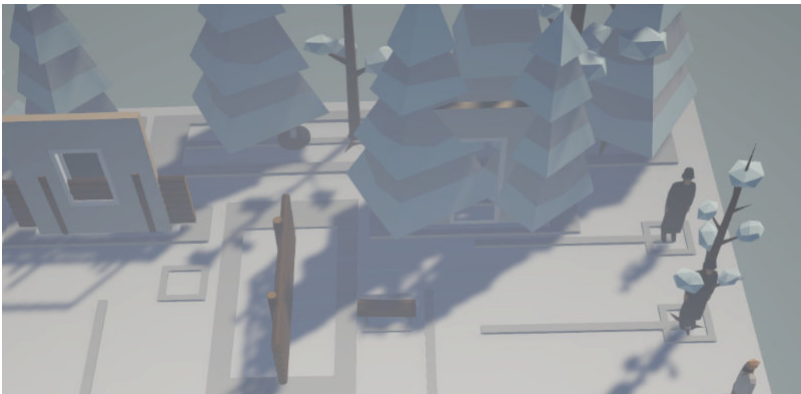
Conceptualizing the prototype of The Memory Machine

In addition to the UE students' prototypes, we analyzed already existing games. Of particular note here because of their subject matter are *Through the Darkest of Times* and *This War of Mine*, which deal with the Nazi regime in Germany and the trauma caused by wars in a country's population.

In turn, the games *Assemble with Care* and *GNOG* had the greatest influence on the development of game mechanics and interactions. The former provided inspiration for a tactile, satisfying experience interacting with complex mechanisms, while the latter showed us the potential for wordless storytelling that puzzle games offer.

The student project *Essence of Souls* inspired us to work with an episodic concept. We also pursued an approach that the *Essence of Souls* team ultimately discarded: using a cube that depicted a different me-

Screenshot from the first prototype



mory of a person on each side.

This led to the idea of a wooden "puzzle box" that was visually represented as a carillon. Each side of the cube shape was home to a diorama. These dioramas represented the memories of survivors of the Holocaust, with hidden functionalities and mechanisms that the player discovers through interaction to unlock the subjacent experiences by solving puzzles.

Researching the topic

After defining our core idea, we began a more in-depth research to get clarity on the game's content. We read eyewitness accounts, historical sources, contacted the Jewish Museum in Auschwitz, among others, and watched documentaries. The rather broad research at the beginning of the project turned into a specialized one in the course of time, primarily on the place Auschwitz, the concentration camp, its liberation, the eyewitnesses from the camp and how the eyewitnesses are doing in the present. Through this we found the stories of the Holocaust survivors that we wanted to tell in the game. This overview of the content showed us the requirements concerning the game's mechanics that were placed on the interactive system of the Memory Machine.

With these challenges in mind and in consultation with the project advisory board and committees affiliated with the project, we ultimately reduced the focus of the Memory Machine to the Polish city of Oświęcim, even though it has no direct connection

with the AMCHA organization or other projects they oversee. This decision was determined by several factors.

First, there was the somber reason for which many people know Oświęcim nowadays: It is the place where the Auschwitz-Birkenau concentration camp was built.

But apart from the recognition value for the player, the city represents the perfect example of a place that, in its own way, was also traumatized by the Holocaust. We learned that Oświęcim was a recognized place among European Jews, where one could spend one's twilight years in a flourishing society. Within just a few years, the city became the place that perhaps most exemplifies the cruelty of the Nazi regime worldwide. To this day, more people in the world know the name of the concentration camp than the name of the town. We became aware that the inhabitants of Oświęcim are still struggling to lead normal lives and to coexist with the history of the ground they live on.

One of our main intentions was to show the lasting trauma left by these events, which continues to affect people's lives to this day. For us, Oświęcim was the ideal symbol: an idyllic center of Jewish society, destroyed by the Nazi occupation and eventually recovered, but as a monument to the suffering with which it is forever inextricably intertwined.

Like many people, the city will bear the scars of those days for the rest of its existence, and hopefully find partial relief in shared memories and its cautionary function for all.

Workshops and Advisory Board

Throughout the production period, we were accompanied by iRights.Lab with their workshops. In these exclusively online seminars, members of various groups supported by iRights.Lab met to report on the current status of their projects. After sharing information about the project status, the teams were divided into pairs so that each group could provide individual feedback on the work and pose further questions to the other team. In this space we were able to discuss individual aspects and design ideas in more detail and to share how certain decisions might be better or worse for our goals. Primary discussion points for us were the visualization and the interactive design of the game. The range of media used by the other groups was wide, from AR visualizations to chat apps. Only one other team developed an interactive application just like we did.

In addition to the workshops, we were supported by an advisory board with experts from the fields of culture of remembrance, pedagogy and psychology as well as contemporary witnesses. In our online meetings we could ask questions when we were stuck due to a lack of expertise. They gave us helpful feedback without trying to dissuade us from our ideas.

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Chapter 3

Production

After we had defined the core idea and, thanks to our research, were able to define some parameters of the game mechanics, we started the production of the prototype. The intention was to develop a first playable version early on to be able to test the applicability of the ideas and concepts and adapt them if necessary. The focus here was to establish the rules and mechanics of the game as best as possible before we worked on the visualization in the next step. This bifurcation of the production stage is conventional in game development, as it prevents elaborate 3D models from having to be discarded in favor of the game experience.

For The Memory Machine, this section confirmed some of our theses regarding the design, but also revealed deeper problems with the concept. These and our solutions are explained in the following sections.

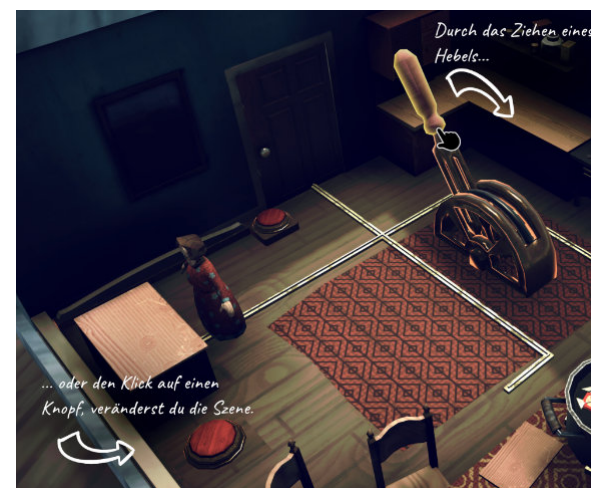
Objects

A major focus in early production was to create a versatile model that was adaptable to the different stories of the survivors. In this way, we minimized the need to develop new mechanisms for each different story ad hoc. Because of the sensitivity of the topic, we wanted to be able to focus on turning real people's narratives into interactive puzzles using the tools we developed, rather than getting bogged down in technical challenges.

It soon became apparent that the use of objects proved to be a promising way to create such a model.

Through our own experiences and, more importantly, through reading many eyewitness accounts of Holo-

(left to right) button and lever, Cholent pot with meat



caust survivors, we realized: people tend to associate memories - especially feelings and impressions - with objects.

This also suits the concept of a puzzle game, in which objects often function as keys or individual parts of a larger mechanism. Thus, finding, examining, and correctly placing objects emerged as the core of The Memory Machine's interaction mechanics. We could use different objects for different stories without having to constantly change the mechanism itself.

We first tested the ideas for such a game mechanic on a pocket watch that played a significant role in the story of survivor Ben Anolik and his brother Nisan. Although the pocket watch did not make it into the final game, it gave rise to the "time travel mechanic" that remained a crucial part of the core experience in later iterations of the game. This demonstrates the importance of this initial phase of production for game development to try out ideas and build them up incrementally.

The players role

Interactive applications tell interactive stories. Each game therefore has its own game-mechanical language. In the course of the game, the players learn to understand and speak this language.

Many educational games position the players either as actors in the world or as passive observers. For us, both options were out of the question.

Interaction, and thus the possibility of agency by the



Players in the role of prisoners have to demolish the synagogue ruin

game players (regardless of the degree to which they are present in the experience), always implies some kind of control. Especially in relation to the stories of the victims of the Holocaust, who precisely had no control over the events and crimes of that time, a grotesque discrepancy between the game experience and the story portrayed arises when the players' role becomes that of an active participant. But even pure passive observation can prove problematic: According to most experts interviewed, portraying the survivors' memories as something that happens in real time in front of the game players' eyes is at best inadvisable and at worst outright history-revising.

The role of the game players had to be anchored in a way that both met the mechanical requirements of

the game experience and delivered the right message to the target audience. Above all, respect for the memories of the real people whose experiences and suffering were depicted in the game had to be maintained.

To achieve this goal, the prototype went through many tests and changes during the first phase of production.

The design of the first iteration of the concept, for instance, was considerably less restricted than the game became in its final form. In the dioramas, most of the figures representing the people were initially

Players have to shovel ashes from the ovens in the role of a „Sonderkommando“ prisoner.



placed next to the board. A major component of the game was then to correctly place the actors in a scene on the board in order to solve the puzzle. Aiding the players in this process were the shapes of the bases of the figures, which only allowed for certain placements. This freedom that we thus gave to the players became the source of the most urgent problems to be solved in the development of the prototype.

The first scenes were based on the true story of Benjamin Anolik, who reached the Klooga labor camp at the end of 1944. Thus, he witnessed the hasty attempts of the Nazis to make the evidence of genocide disappear before the arrival of the Red Army, executing the prisoners or burning them en masse. Among these prisoners was the uncle of the Anolik brothers. In the first playable version, we told the entire story of Ben and Nisan, in and around Klooga: from their arrival by train, how their uncle gave them his pocket watch, to their successful escape from the camp, after which they were found hiding in the forest by Soviet soldiers.

The original idea was to give the players the freedom to move the pieces freely around the board to find the solution to the story. However, in doing so, the players were able to create some situations that were uncomfortable or downright inappropriate and historically incorrect when viewed.

The best example of this is the opening sequence of the scene in which the player were supposed to put the SS soldiers into the slots of the drivers and patrols of the prisoner train. Effectively, however, the players had the option of reversing the roles and creating a scene in which the Jewish prisoners drove a train full of SS soldiers. Apart from this questionable

possibility of role reversal, the intended interaction posed another problem: if the players completed the scene as intended, we put them in the role of an accomplice to the cruel process. The players assumed moral responsibility for the resulting consequences, an outcome that was far from our pedagogical intentions. We did not want to force any of the players to perform an action that contradicted their moral beliefs.

In the end, we designed a handful of different input objects that function as the story's interface, based on a clockwork design. Pressing a button triggers a mechanism, a lever shifts objects between different positions, and a crank makes major changes to the layout of the digital world.

Prisoners in a factory



All of these input options allow a variety of situations to be interactively presented. Here, the players use the mechanical system instead of directly controlling one or more characters. They modify aspects of a survivor's memory and, through exploration, deal with the traumas involved and struggle against the loss of control inherent in the mechanism. Thus, the content reflects the loss of control by the victims of the Holocaust, while the players also struggle to gain control over the mechanism.

Especially in morally charged situations, these interactions have little influence in the final prototype and are kept to a minimum. Thus, the players cannot change the outcome of the story; rather, the interactive parts function as individual building blocks that can be moved without causing the tower to collapse.

Liberated prisoners receive rations from the Red Army.



The web part of The Memory Machine

In the course of the research phase, we realized that we wanted to make many of the stories and destinies we dealt with accessible to the players, even if they didn't make it into the final version of the prototype. We experimented with including photos, videos as well as text directly in the game. We found that while a game can be a multimedia tool, integrating long sections of text crosses a line. Each medium has its strengths, but the integration of a textbook and longer interviews was not the forte of our concept.

To provide these sources nonetheless, we used the implicit advantage of the web platform. Since the game itself would run online in the browser, we could make external online sources accessible to those playing the game with just a few clicks.

This is how the concept for the web part of the Memory Machine came about: interconnected with the game is a list of sources that activate themselves depending on the context.

If, for example, the game shows a scene in a concentration camp, corresponding questions such as "What was life like in a concentration camp?" appear at the screen margin. A click then takes the user to a source that provides information on this topic. It is left to the players themselves to decide which topics they would like to explore beyond the game and to what extent.

The goal of the Memory Machine is to use the potential of the Internet and to emphasize the variety and relevance of different sources, instead of failing to meet the didactic task through the game alone.

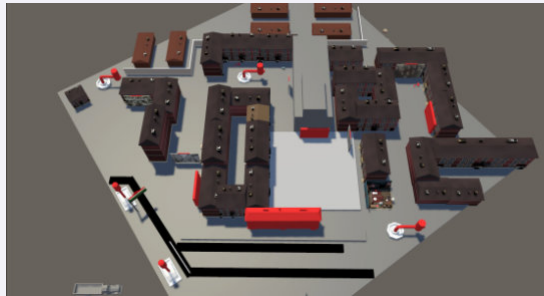


Representation of the web integration of the game

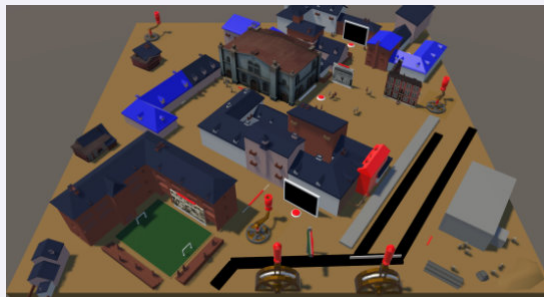
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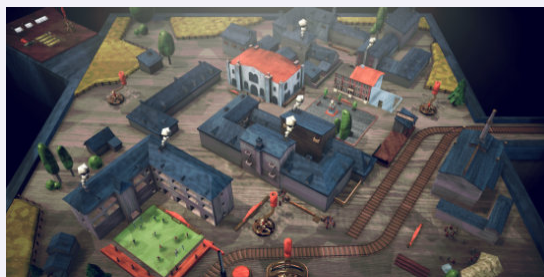
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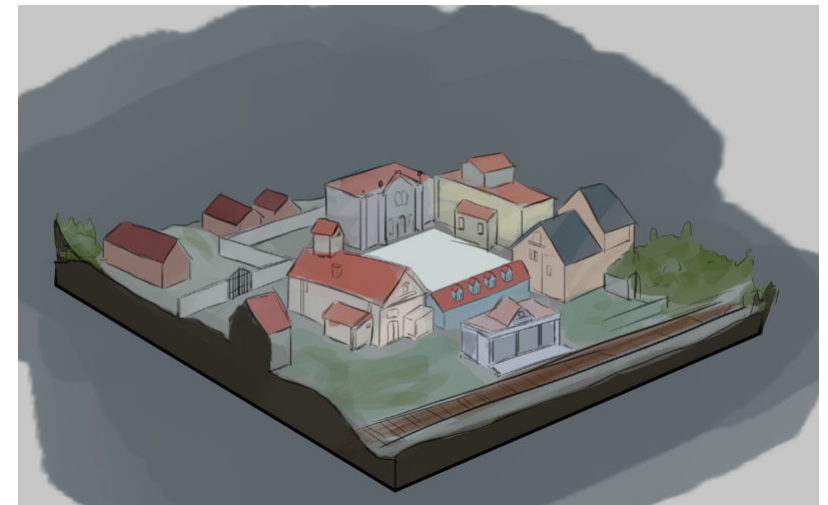
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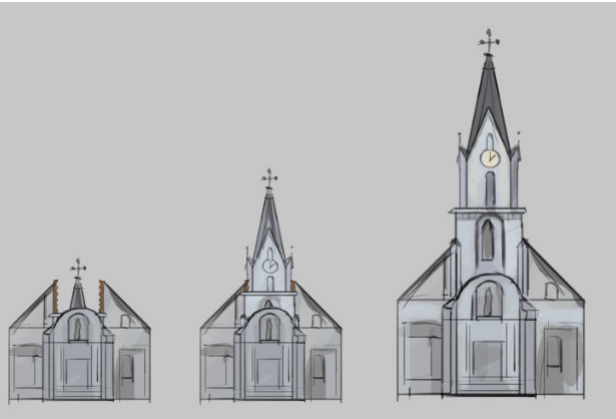


Visualization

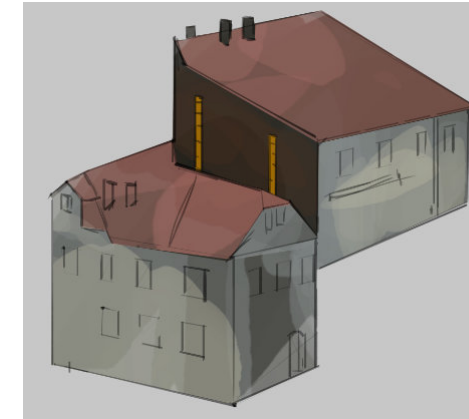
In the first phase of production, we worked visually with placeholders that allowed us to make changes to the game with little effort. Only when the rules of the game were largely solidified did we take on the visualization of the prototype. Changes to the mechanics of the game from this point on have more far-reaching consequences, as often entire 3D models would have to be changed or redeveloped. Accordingly, it is preferable for the transition from the first to the second phase to take place as late as possible to avoid doubling the work.

Concept art of the city Auschwitz





Concept art multiple different buildings



Concept art for mechanisms of houses

For *The Memory Machine*, the representation of miniature dioramas with complex mechanisms hidden beneath the surface was already set. Nevertheless, the exact look of the game went through several revisions and held its own unique challenges.

First, there was the technical component, which requires special attention for a game that is embedded on a website.

Developing games for the browser brings limitations and advantages that affect the production in positive and negative aspects. One advantage of the browser as a platform is that it is not necessary to download and install the game. Due to the accessibility via the browser, the game is platform-independent and can appeal to a broad target group, since it can be accessed from any computer with Internet access.

Conversely, however, this also means that it is not

playable with insufficient or no Internet access. For use of the game in schools, it should therefore be ensured that opening the game simultaneously on different devices does not cause such a high demand on the network that playability is significantly impaired by excessively long loading times. The memory size of the game should accordingly remain as small as possible. In addition, browsers, which otherwise mainly have to display regular websites, are prone to interference with technically demanding displays; thus, not too many objects should be displayed at the same time.

These parameters did not allow us to use a large number of polygons or high-resolution textures.

However, the determining factor for the decision to refrain from a realistic visualization of the stories was not so much the technical or budget-related limitations, but mainly content-related reasons.



Sketches of figures

Various feedback from test players and meetings with the project advisory board as well as the other teams of the iRights.Lab workshops, led us to the following conclusion:

Many realistic depictions of the Holocaust, especially digital recreations designed for interactivity, quickly come across as inappropriate, if not disrespectful.

For us, an important step toward defusing this lay in the aesthetics of the dioramas. The originally intended style of meticulously modeled miniatures gave way to a rougher wooden look for the figure collection.

This also complemented the narrative perspective of

our game. Here, the model-like visualization corresponds to the mental model of a third, uninvolved party whose role the game players take on without having to assume the role of the survivors themselves. Even in the presentation of the prototype to external people, it thus became clear that the puzzle box and the episodes it contains do not represent actual events or a direct memory of them. Instead, they represent the image that emerges in the minds of the recipients when they are told the stories of the survivors.

By abstracting on several levels, we were given the freedom to take on serious topics and actions and present them in a preprocessed way.

3D models of figures



Experts Opinion - Memory Machine: an explorative serious game

Dr. Tobias Ebbrecht-Hartmann
Department of Communication & Journalism
The Hebrew University of Jerusalem



The game centers on the Polish town of Oświęcim, where the Auschwitz concentration and extermination camp was established in May 1940. The players experience this place at different historical points in time and can thus witness and comprehend situational changes and the resulting consequences. The game starts in the pre-war period. The players experience how a small Jewish community emerges in this place and gain insights into Jewish culture and traditions. In addition to historical sources such as photographs and films, the players can call up additional externally provided information and sources of information on selected questions. From the pre-war period, the players reach the time level of the use of the site as an extermination camp. From there, they reach the liberation phase in January 1942. The last time axis deals with the aftermath and ranges from the creation of a memorial and museum in Oświęcim to the emigration of the survivors to the USA or Israel.

Gamified historical diorama

However, the design of the game deliberately refrains from a supposedly authentic, historical reconstruction of the place. It is precisely not about creating an impression of reality or attempting to construct an immersive virtual experience. Instead, the focus of

the game is an abstracting model that deliberately incorporates non-realistic elements. The design follows the principle of the diorama. Such showcases usually display typical, often narrative scenes designed with small figures. With attention to detail, they combine the principle of the model with the logic of scenically designed painting or photography. Some dioramas also take up the idea of the hidden object.

The Memory Machine project also combines the diorama with the principle of the puzzle. The players must actively put pieces together to trigger mechanisms that reveal new levels. This creates a model-like but complex game world based on one location, but one that changes over time, from scene to scene. Within each diorama, small situations take place that hint at the fate of the victims. Historical sources, real photographs and films, are incorporated directly into the game world.

Another element are mechanical elements, especially levers and cranks. On the one hand, these serve the purpose of interaction. With their help, the players can change the scenes and thus move to the next level. Furthermore, the technical tools also function as collectibles that the players have to uncover, discover, collect, and reuse in order for the scenes to change. Finally, the mechanical elements also contribute to the alienation of the scenery. They illustrate that history is the subject of construction and active work, and that we approach it in a model-like fashion and cannot "authentically" recreate the past.

By resorting to scenic dioramas and puzzle structures, the game already integrates considerations of historiographic procedures of visualization and reconstruction of history, which can thus also be thematized by means of the game. This is also intended to take into account the often emphasized problem that the unprecedented crime of the Shoah eludes the imagination and thus also the pictorial representation to a certain degree.

Active engagement with history

The following elements distinguish Memory Machine as a reflexive attempt to develop a serious game for active engagement with the history of the Shoah. It should be emphasized, however, that the game can only serve as one building block among many, or functions as a stimulating medium that must be connected and contextualized with further information, sources, media, and stories.

The game is the result of the developers' active engagement with history

Memory Machine is itself the product of an active engagement with the history of the Shoah. The development of the game is the result of extensive research and discussion processes within the development team. While other digital applications for dealing with history are usually designed by professional mediators or historians and then implemented by external developers, the curiosity and questions of the developers themselves were at the center of the discussion here. This allowed them to see the challenges for themselves and immerse themselves in the complexity of the story. In this way, the game reflects the personal confrontation with the topic. The developers approached the subject matter from a similar position as the future users, which is reflected in the layout, narrative, and design of the game.

The game avoids the impression of historical authenticity and instead chooses abstraction and a form of model-like visualization.

Memory Machine reflects the problem of representation of the Shoah in its approaches to visualization in that the game distances itself from the paradigm of authenticity and instead chooses model-like visualization in scenic dioramas that can be experienced sequentially as different time levels. This form of visualization results in a certain alienation, which on the one hand allows access to the history of the concentration and extermination camps, which is in large parts disturbing and overwhelming, but on the other hand prevents effects of trivialization by inserting historical

sources, especially photographs, into the model-like landscape of the dioramas. These historical photographs also enable a comparison between the game world and the historical world. In this way, on the one hand, the players can deconstruct the fictional landscape as such. On the other hand, they can also reflect on visual icons, for example by juxtaposing historical photographs and recreating corresponding iconic places such as the camp gate or scenarios that have become iconic, such as the piles of corpses found after the liberation of the camps. The fictional memory landscape (the model-like diorama) is also not staged as a hermetically delimited virtual world, but rather has transitions and points of contact to historical contextual knowledge outside of the game through corresponding questions assigned to the individual scenes accessible through enlargements.

Through the puzzle structure and the built-in interactive elements, the game promotes an active form of engagement with history.

Memory Machine enables an active engagement with history through the involvement of the players in the historical scenes. This involvement does not occur through the means of immersion. Instead, the urge to interact is mobilized. Players can click and zoom in on individual areas of the diorama, and thus discover further places and scenes within the model-like environment, with which they can in turn interact. The collection of objects does not take place in competition, but with the purpose of independently helping to shape or complete the virtual memory space. This activates detective and exploratory modes of action. The logic of the machine (following the idea of a history machine) enables the players to understand the confrontation with the past and its layers also in the sense of working with history.

The game enables the reflection of different layers of time and thus conveys a multi-layered impression of nonlinear historical processes

Memory Machine does not follow a linearly arranged principle. History is layered in the game. Thus, the players can become aware of diachronic developments and changes at the historical site as

well as of the interplay of different places within a time layer, which gives an idea of the experiences people had or were forced to have there at different times.

The representation and thus experienceability of such layers of the past is, however, also clearly understood as the consequence of an active participation and confrontation. The history of the site as it is presented to the players here is based on a model understanding of the past as time that is no longer available and that must be condensed and shaped. This shaping is supposed to happen in interaction with the players. Therefore, they move through the plot in simple interaction and gradually discover it themselves. The cranks and levers they discover, activate and set in motion in the course of the game make them the initiators of historical processes that uncover historical information.

The game emphasizes the importance of objects and sources in telling and experiencing history

Memory Machine is based on objects that tell and convey history. The players reconstruct historical building blocks of the time layers of the thematized site of Oswiecim using objects, photographs, films and texts, which they discover, activate and study independently and in a non-prescribed order. Each of the dioramas contains a number of such objects, which tell the specifics of the place at a particular time. These are either virtual objects, which can be collected by the players and then used accordingly, or historical sources. On the one hand, the use of the virtual objects follows playful motives. On the other hand, the players become curators of history by filling gaps - so-called slots - and in this way completing the memory landscape with which they interact, without being able to close all gaps and voids.

On the one hand, the photographs and film documents serve as historical sources that convey certain information or can stimulate further discussion. But they also have an alienating effect, which clarifies the model character of the game and its design. Photographs and films are projected onto screens within the

playscapes, thwarting the impression of historical reconstruction of historical sites and instead emphasizing the mediating character.

Finally, the photographs and films also offer the opportunity to compare historical events and their recreation in the fictional setting of the game through direct juxtaposition. The canvases form additional frames (screens) on the monitor or display of the player. This creates the precondition of comparison, through which questions of representation and visualization of the past can be raised.

The sources thus form a central framework for the game and enable access to further available knowledge. In this way, Memory Machine also presents itself as a learning environment that encourages critical forms of playful engagement with the traces and sources of the past.

The game structure reflects the importance of decision-making processes and their role in the context of historical events.

Memory Machine makes it clear to the players that history and historical processes, as well as their reconstruction, are the result of active deeds and decisions. Through the interactivity built into the game, the players have the opportunity to move independently through the different time levels within the historical parameters. They choose the order of exploratory investigation of the site as well as the speed and resulting level of attention with which they relate to the site and its history. You yourself must choose again and again. You must interact with the challenges and limitations of the game, and seek and find solutions to problems in order to unlock the layers of the past using the levers and switches that set this history machine in motion. Even with the content provided by the game, your own active engagement is required to choose the individually interesting content yourself.

4

Chapter 4

After completion of the prototype

Current version and alternatives

We received positive feedback about the current version of the game from the playtests and from the advisory board. The levels felt diverse as well as interesting and students were given enough material to further explore specific topics.

However, despite the prototype being solid and working, there would have been other approaches worth trying.

For example, a greater focus on the topic of trauma (as a core theme of AMCHA), its origins, inheritance, as well as impact on the lives of victims would certainly have been interesting as well. Here, if necessary, we could have focused on a greater influence of decisions in the game, as there would have been less need for direct representations of historical events.

In the end, after many deliberations and meetings with the advisory board, we decided on the current variant of interactive content mediation, in order not to

lose sight of the intended use in schools in particular.

Challenges of the working method

The novel and experimental way of working on the project offered us developers a lot of freedom, which we in the team appreciated. Nevertheless, it presented us with challenges at some points, some of which affected the quality and efficiency of our work. In order to contribute to a possible improvement of these points on future projects through our perspective, we have collected below the most relevant difficulties for us.

Communication with the different stakeholders

During the development period, our understanding of the project and its content changed. Although there was an objective at the beginning, partly explicit and partly more implicit, the weighting of these objectives varied constantly. From different perspectives the following orientations reached us:

1. a game about the AMCHA association and its work and perspective
2. a tool for education and schools
3. a collection of personal stories of affected people

Due to the large number of actors involved, who actively expressed their opinions in different ways, many new and insightful perspectives were added, which, however, were not always compatible with each other.

For example, despite the abstract form of presentation we had chosen, there were discussions right up to

the end about what we should present and what we would rather not. Opinions on this often differed widely. For some, the depiction of a pile of corpses may have been taking it too far; for others, it was not okay to show places like a crematorium.

Such discussions are fundamentally beneficial to any creative work and provide a deeper understanding of a subject, which was particularly positive in the case of this work. However, by the end of the project, there was an increased repetition of contributions that had already been debated. Also during this period, we received entirely new input that regrettably came too late for us to implement and that we wished had been communicated clearly enough earlier in the process.

Inherent in the approach to game development is that there are different points in time where certain types of feedback are particularly valuable. At the beginning of a project, it is usually easier for us to receive and incorporate new aspects. If substantive feedback comes too late, it is often difficult to change the points raised without being set back weeks or even months in the development process, so decisions about which comments to implement are often made based on timing.

We in the development team were aware of this law of game development, but all other entities involved were not necessarily. Accordingly, the project was not designed with this rule in mind in terms of timing, and feedback often reached us at the wrong points at the wrong time.

This lack of clarity made communication difficult in many aspects, worsened it, and at times was a source of frustration.

Research

When working on a project dealing with the Holocaust, a certain amount of mental strain is unavoidable. The fact that we were all familiar with the subject only to the extent that probably most people with a higher educational qualification are, added exhaustion to the sheer workload that long researches of historical sources entail. Not only did we spend many hours dealing with a subject whose burden we had barely learned to handle, but we also had to make design decisions based on the research. In between, we often lacked the necessary time to process the material and find a personal way to deal with it. Figuring out these difficult issues with ourselves or discursively within our team turned out to be not only burdensome but equally inefficient in many places. It was not uncommon for 3D models, levels, or entire systems to be discarded after feedback rounds, not because they didn't work in terms of mechanics or didn't fit with the rest of the game, but because they could hurt the feelings of people involved or seemed inappropriate. And while no developed game ever ends up looking like it did in the imaginings of the initial designs, many of *The Memory Machine's* problems were due to insufficient familiarity with the subject of the Holocaust.

At this point, it is important for us to point out that leaving the research to the developers is an extremely unusual process for games with this kind of subject matter. In many serious and educational games, the narrative concept, the treatment of the theme, and in parts the design are clearly defined by a person with expertise in relevant historical, psychological, or otherwise theoretical backgrounds. The developers are then left to implement their parts on this basis.

In the existing composition of the team, at each stage of the project's development, one or two members had to divide their time equally between research and their actual work as game developers. This turned out to be an exhausting double burden.

In our opinion, better results could have been achieved if research and content preparation had been separated, for example by having a historian provide processed sources. Although the input, critiques, suggestions, and additional materials from the feedback sessions were helpful, there is a massive difference between these resources needing to be worked through and interpreted independently, and an expert being approachable on a daily basis and actively involved in making decisions for the game, rather than simply providing feedback on completed interim versions.

It is our advice for future work on the project, as well as for similar future AMCHA projects, that a historian or psychologist (or other expert, depending on the nature of the content) become part of the core team. In this way, design decisions could be made through a dialogue among various stakeholders who can discuss the pros and cons of their positions with each other accordingly. So that one person (as in our case, without deeper prior knowledge of the topic) is not expected to independently investigate, only to change perspective the next moment, and then do the transition and development job.

Experts Opinion - Outlook and recommendations

Dr. Tobias Ebbrecht-Hartmann
Department of Communication & Journalism
The Hebrew University of Jerusalem



The online game Memory Machine is a prototype that provides interesting and important ideas about how playful environments can be used to promote active engagement with history. Although not all approaches could be equally developed and fleshed out, the game in its current form nevertheless demonstrates the added value of a collaborative and exploratory development process. Memorial, mediation and funding institutions can see from this example that not only the end product but also the development process is of particular importance in digital projects, as this is always also a learning process. The Memory Machine team has taken this opportunity to explore the topic, with all its challenges, independently and collaboratively. This experience of collaborative learning about the history of National Socialism and the Shoah is also reflected in the conception and design of the game.

Like other games on this topic, Memory Machine can serve as merely another building block in a complex structure of teaching and learning about National Socialism and the Shoah. The game can be used both to create access to these topics by using its playful character to raise questions that are then explored in depth and answered together. The initial game experience, shared with others through walkthrough videos or narrative screenshot presentations, for example, would be followed by a phase of historical learning about the historical site of Oswiecim/Auschwitz, e.g., through survivor accounts, contrasting perpetrator and victim perspectives, or based on the visual evidence of the Shoah in the

form of photographs and films.

However, the game could also follow on from such a historical examination and then be used to direct the view from dealing with history to its later cultural processing. Then questions of representability could be discussed and the construction character of historical narratives in particular could be examined more closely on the basis of the game experience. The principle of research-based learning and curating could then be used after the play experience to develop one's own interactive exhibitions, play approaches or similar.

5

Chapter 5

Conclusion

This project has shown the potential of games as a tool for the educational context. Above all, it also shows what it means when we as a team of developers are not just an extension of the team, but have a significant influence on the design with our own understanding of the medium. Through this change of perspective, we have learned a lot about a reverent approach to historically sensitive topics and the culture of remembrance.

At the same time, in our exchange with cultural institutions, scientists, historians and other experts, we have found that the understanding of the medium of games in such areas is unfortunately still quite low.

On the one hand, this applies to games and their design: How do games work? What can games do well or badly? On the other hand, it also applies to the process, which is always subject to certain laws, can be

very technical at its core, and forces everyone involved in the design process to transform abstract ideas into concrete design at an early stage. In contrast, especially in the area of educating students, there is a target audience that demonstrates a high level of digital literacy and experience with games.

We often encountered a conservative attitude: you can't make a game about certain topics. In dialogue and discourse, however, this usually turned into an interested and benevolent attitude. Especially with the advisory board, we were pleasantly surprised by the open-mindedness.

Nevertheless, some fundamental misunderstandings about how games work and how they differ from other media became apparent everywhere.

For example, games are not always synonymous with fun; they allow a variety of moods and also a respectful approach to sensitive topics. However, certain content doesn't work here the way it does in other media. Classic linear text content is more difficult to present in games than in print media or on websites, for example. Games are procedural and highly systemic in nature through interaction. They do not simply reproduce content, but make it comprehensible and experienceable.

How games work can be learned through direct interaction and playing. For future projects, whether serious or educational games, working at eye level and interdisciplinary exchange could be very enriching. We believe that the full potential offered by the medium of games can only be exploited in this way. Not only also - but especially for games on sensitive topics, as they allow an access here that no other media form can offer.