Rhetorics of the Interactive 3D Installation "Virtuelle Mauer/ReConstructing the Wall"

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Abstract. This case study of "Virtuelle Mauer/ReConstructing the Wall," a prize-winning interactive 3D installation on the Berlin Wall, describes an approach using artistic concepts of abstraction and interactive narratology to simplify production and focus on subtle but powerful user interactions with the virtual world. Interactivity is predetermined and invariable, but after two years of exhibitions in Europe, the USA and South Asia, the authors are confident that it provides an engrossing, affective experience for a general public across cultures and including schoolchildren and their teachers, contemporary witnesses and their families, historians and historic preservationists.

Keywords: interactive narrative, virtual worlds, cultural heritage.

1 Introduction

This paper describes rhetorical devices used in the prize-winning interactive 3D installation "Virtuelle Mauer/ReConstructing the Wall" to create an affective encounter with the long-vanished Berlin Wall. [1] Users, moving through the virtual world in a first-person viewpoint, experience the freedoms and constraints on movement that residents had in their respective neighborhoods in East or West Berlin. The interactivity, encounters with virtual characters and dramatic structure are predetermined and invariable, but we believe this paper can provide insights both for content creators wanting to design effective interactive narratives with current technology, and for researchers developing technology for computer-driven interactive drama systems.

"Virtuelle Mauer/ReConstructing the Wall" was developed by the artist team T+T, of which Tamiko Thiel and Teresa Reuter are the principals. It was created in close cooperation and with the support of the Berlin Senate Chancellery for Cultural Affairs as an integral part of its Memorial Concept for the Berlin Wall. Partial funding was provided by the Berlin Capital City Cultural Fund (Hauptstadtkulturfonds).[1]

The Berlin Wall was the best-known symbol of the Cold War and still arouses curiosity even in people with little other interest in European history. "Virtuelle Mauer/ReConstructing the Wall" draws on this interest to engage a general, world-wide public, including schoolchildren and their teachers, historic preservationists and historians, older people who perhaps encountered the Wall themselves in East or West Berlin and young adults born after the Fall of the Wall, for whom the Cold War seems like "ancient history." A very special public is families, with children keen to navigate the virtual world as the "computer game experts" but in the process unconsciously opening up to stories from their grandparents and parents about this important period.

With substantial support from the German government cultural institution Goethe-Institut we showed the installation extensively from 2008-2010 in Europe, the USA and South Asia in events leading up to an memorializing the 20th anniversary of the Fall of the Berlin Wall in 1989.[2] "Virtuelle Mauer" has been praised by historic preservationists and historians for providing an engrossing, affective encounter with

[1] Other sponsors included: Berlin Wall Documentation Center/Berlin, Federal Republic of Germany State Department, Goethe-Institut Boston, Dr. John Czaplicka/Harvard University Center for European Studies, Massachusetts Institute of Technology/Center for Advanced Visual Studies, metroGap e.V. – Association for Urban Theory and Practice, Bitmanagement Software, JSC Softline, Lunatic Interactive GmbH.

[2] Selected exhibitions in Germany: Museum for Communication Berlin (Aug.-Sept. 2009), City Museum of Berlin (Nov.2009-Feb.2010), Willy-Brandt-Haus Lubeck (June-July 2009), Kunstverein Wolfsburg (Sept.-Nov.2009). In Spain: LABoral Centro de Arte Gijon (Oct.2009-Apr.2010). In the USA: 911 Media Arts Center Seattle (Nov.2008-Jan.2009), Goethe-Institut / Cyberarts Festival Boston (Apr.-May 2009), Harvard University Kennedy School of Government Cambridge (Nov.2009), American University Museum Washington D.C. (Nov.-Dec.2009), Goethe-Institut Los Angeles (Nov.-Dec.2009). In India: Goethe-Institut in New Delhi (Dec.2009) and in Bangalore (Jan.2010), India Institute of Technology Mumbai (e.g. Bombay, Jan.-Feb.2010). In Sri Lanka: Goethe-Institut Colombo (Jan.2010).

the now vanished Berlin Wall, [3] reviewers from Boston, USA to Bangalore, India hailed it as their "Critic's Choice" and in 2009 it won the Grand Prize of the IBM Innovation Awards for Art and Technology at the Boston Cyberarts Festival. [2]

Although the contextual background and knowledge of Cold War German history of each audience was very diverse, we observed similar emotional responses to the dramatic devices described in this paper with all audiences. This paper is based on anecdotal evidence rather than rigorous scientific studies of audience reactions, but it was very important to us to understand and improve the dramatic impact of our work so we spent many hours at each exhibition observing users at the joystick to see how they navigated the virtual space, and talking with them about their reactions to the content to see if it came across in the ways we had intended.

The mechanisms described here evolved partly due to constraints on finances and resources familiar to all content creators. The production grant from the Berlin Capital City Cultural Fund covered less than half of the real costs of production; nevertheless the expectation was that our piece would accurately reflect the built environment of Cold War Berlin. We needed to use creative insights into interactive narratology to minimize the technical complexity of the system and the amount of content that we had to produce. We initially planned to involve the user in historical escape attempts, using a dramatic structure closer to a classic game design, but were advised by the Berlin Wall Documentation Center, the official Berlin memorial center for the Berlin Wall, that the families of those who died in escape attempts at the Wall react very negatively to any works that bring the tragic destinies of their relatives into a "game-like" context.

As T+T artist Tamiko Thiel has argued elsewhere, depending on the content to be conveyed it may be efficacious for designers to shift focus from "interpersonal" interactions between the user and characters to interactions between the user and the virtual world itself, with characters considered simply as special elements of the virtual environment. [3] This can be true even if user interactions with characters are an important part of the drama, as is the case in "Virtuelle Mauer/ReConstructing the Wall," where interactions with officials play a vital affective role in the piece. Characters are used to illustrate and reinforce aspects of the virtual world, especially restrictions on free movement, rather than being the primary focus in a character-centered narrative.

2 Description of Project Content and Goals

For decades the Berlin Wall was a symbol of repression and of the division of Germany, Europe and a large portion of the world into two politically opposed systems: Communism and Capitalism. The Berlin Wall was "built"[4] practically overnight on August 13, 1961 by the East German government to prevent its own citizens from fleeing from Soviet occupied East Berlin to Allied occupied West Berlin. [4] On November 9, 1989, to the complete surprise of everyone in both East and West it was suddenly and irreversibly opened. The Wall had fallen. [5]

As the premiere symbol of the divisions of the Cold War, people in both East and West Berlin wanted to eliminate the Wall as quickly as possible. Only a year later, almost all significant portions of the Wall had disappeared. For those who never experienced this military fortification cutting through quiet residential neighborhoods in the middle of a modern metropolis, for those who never experienced the steely-eyed glare of a hostile border guard barring the way from one side of the street to the other, the effects of this structure on life "in the shadow of the Wall" are not comprehensible today, nor are the political and sociological divisions that live on in Germany as a "wall in people's heads."

The purpose of the interactive 3D installation "Virtuelle Mauer/ReConstructing the Wall" is to give those who have never encountered the Wall, especially young people born after its fall, an affective, kinesthetic encounter with the Wall. Our project area is a one kilometer (0.56 mile) stretch of the Berlin Wall between the West Berlin district Kreuzberg and the East Berlin district Mitte. We chose this particular area because it featured many of the surreal situations engendered by the Wall: a densely built inner city residential area split in two by the Wall, the "inner German" border crossing Checkpoint Heinrich-Heine-Strasse, where no local residents were allowed to cross (only West Germans resident outside of Berlin were allowed to transit here); destructive changes in the cityscape as a result of wartime bombing and the erection of the Death Strip; urban renewal in post-war East Germany; daily life in the shadow of military fortifications – under constant surveillance and with the possibility of lethal crossfire in the case of an escape attempt; and finally, urban changes in reunified Berlin after the Fall of the Wall.

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[3] Dr. Axel Klausmeier/ Director, Berlin Wall Documentation Center, Prof. Dr. Gabi Dolff-Bonekämper/Technical University Berlin, Prof. Dr. Leo Schmidt/Technical University Cottbuss, Dr. Klaus Schariot/historian and German Ambassador to the USA (personal communications with the authors)

[4] In the early hours of August 13, 1961 the entire border surrounding West Berlin was blocked off with barbed wire and armed East German soldiers.

On the basis of extensive research in city and state archives, including those of the former East German Secret Police (Stasi), we wove historical events, sounds and images into the 3D virtual world. Users' actions trigger time travel, animations & simulations that depict events spanning the 1960s to the present time, conveying a sense of what it was like to live "in the shadow of the Wall." An important aspect that is expressed through the interaction rhetoric was how a normal person would be treated differently near the Wall in East Berlin versus in West Berlin.

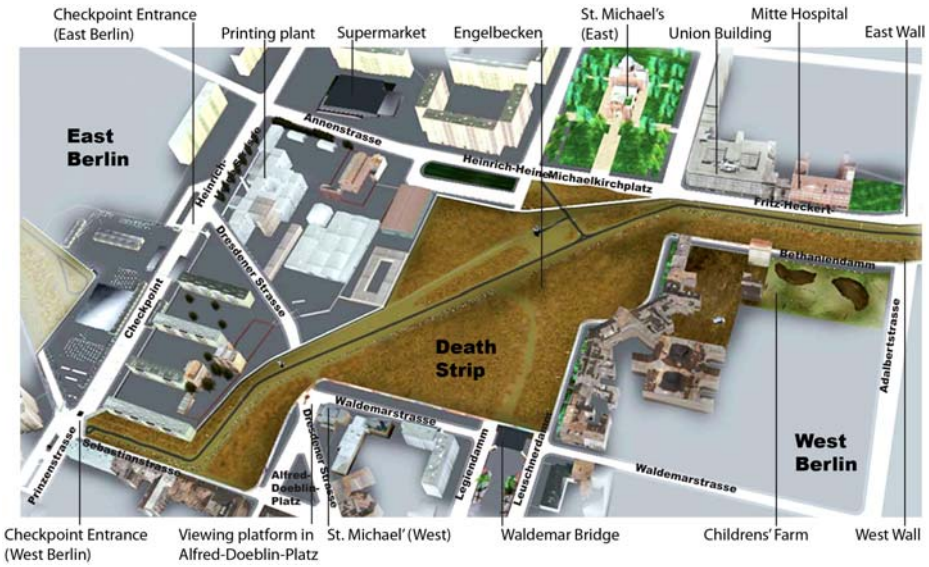

Fig. 1. "Virtuelle Mauer/ReConstructing the Wall," project area map.

3 Discussion of Related Works

The unique aspect of "Virtuelle Mauer/ReConstructing the Wall" is that it provides an interactive narrative encounter with the Berlin Wall in which users are not tourists, immune to conditions of life at the Wall, but rather experience the same freedoms and constraints in their explorations and their movements that a resident would encounter.

The official 3D virtual city model published by the City/State of Berlin shows the entire course of the Berlin Wall using Google Earth technology, but is essentially a 3D map and layers the Wall over 21st century Berlin, which has substantially changed since the time of the Wall. [6] Twinity has a navigable 3D reconstruction which however presents a tour rather than involving the user in an interactive narrative. [7]

An artwork which does confront users with a coercive environment is "Gone Gitmo" (2007) by Nonny de la Peña and Peggy Weil, a Second Life world dealing with the Guantánamo Bay prison camp [8]. After a first-person "introductory experience" of being a hooded prisoner in a transport aircraft users find themselves in a prison cage at Guantánamo. They are however not constrained to the role of a prisoner and can walk out of the cell at any time. [9] Walking around the camp users encounter additional narrative material such as for instance a video of a father relating the conditions under which his son is being held. Additionally, the artists are using materials from the world to present fascinating, highly structured interactive narrative experiences with head-mounted displays, such as the "immersive journalism" IPSRESS Experience in which users see their avatars – and by transference feel themselves – as prisoners being held in stress positions. [10]

Beyond Manzanar (2000), an earlier 3D installation by Thiel in collaboration with Zara Houshmand, constrains users to the role of a prisoner in the former Manzanar Internment camp in California. [3] It layers the internment of Japanese-American families by the US government during the Second World War with similar threats to intern Iranian-Americans during the Iranian Hostage Crisis in 1979-80. Beyond Manzanar deals however not with historic incidents so much as it contrasts the American Dream with the demonization of entire groups in times of crisis.

In a different narrative twist, Maurice Benayoun's virtual reality installation "World Skin" (1997) puts users in the role of photographers in a war zone. As they take "pictures" of the scene with cameras, each portion of the world they "shoot" loses its texture and becomes white. The focus of the narrative is on the short but powerfully destructive interaction between users and the virtual world via the "weapon" of the camera.

4 Description of the Exhibition Design

The physical and technical set-up of "Virtuelle Mauer/ReConstructing the Wall" follows a system that Thiel has tested in venues in many countries over the last decade. It uses a single large projection (3m x 5m or 9'x15') to achieve a roughly life-sized image that is large enough to fill the user's peripheral vision and produce a feeling of immersion without expensive helmet or CAVE equipment. The screen is close to the floor so users feel they can walk "through the fourth wall" into the virtual space. Three-dimensional sound from the virtual world, important to enhance the sense of space, is heard via two active stereo PC speakers. The code for the virtual world runs in the Bitmanagement Software BS Contact VRML/X3D browser on a business grade Windows PC with midrange graphic card (Nvidia GTS 250). The equipment is economical and common enough to be purchased even by low tech venues, thereby reach a broad range of audiences.

The navigational input device is a Logitech Extreme 3D Pro joystick modified to have only forward/back/left/right movement. With artworks that often address historical, wartime incidents, Thiel has aimed over the last fifteen years to reach a broad general audience including the elderly and the computer-phobic, and also disabled veterans in wheelchairs. For these audiences the physical interface must require no previous familiarity with computers, be easy to learn and physically easy to use, so that users can focus on the content instead of the interaction. Even disabled in wheelchairs can steer themselves through real space with simple joysticks, and it is heartwarming to see everyone from small children to the elderly and disabled jump at the chance to grab the joystick and sail off through the virtual world.

The joystick speed is purposely restricted to a leisurely walking pace to encourage users to look around while they walk. Besides the active user at the joystick any number of other visitors can watch as well, and users will often stay to see what things the next users discover. We have tried to include enough material so that users can discover new details each time an episode is repeated.

As users can enter and leave the installation space at any time, the narrative structure of "Virtuelle Mauer/ReConstructing the Wall" has no beginning and no end. There is no break in the narrative when one user gives up the joystick to the next one, so passive watchers have continuity from user to user as well.

Fig. 2. "Virtuelle Mauer/ReConstructing the Wall," installation photograph.

A separate informational exhibit consisting of 8 poster-sized panels is displayed in a well-lit space directly before the entrance into the darkened installation. (A more detailed version is available for sale as a project book in an English or German version.) Maps show the division lines between East and West Germany and Berlin during the Cold War and a chronology gives an overview of the relevant historic and political events of that time. Images depict the construction and fortification of the border structures over the decades. Archival aerial photos and images from different decades show how the urban landscape in this part of Berlin changed as a result of the building and the demolition of the Berlin Wall. We separate the affective and the pedagogical experiences so that users of the installation focus on the sensory and kinesthetic encounter with the virtual world of the Wall.

This focus on the affective experience is particularly effective at getting children to develop an emotional relationship to otherwise difficult historical material. For the academic year 2010/2011 T+T artists Teresa Reuter and Sabe Wunsch have received a grant from the Berlin Project Fund for Cultural

Education to use the “Virtuelle Mauer” installation and its accompanying informational materials as the basis for workshops with Berlin high school students to create projects and exhibitions about the Berlin Wall and Cold War Berlin. [12]

5 Rhetorical Devices in the Media Design of the Virtual World

The visual aesthetic is used to set user expectations and give rhetorical clues as to the nature of the experience. We reconstructed the built environment of our segment of the Berlin Wall and its surrounding neighborhoods as accurately as possible in order to satisfy historic preservationists with a measure of “authenticity.” In order to control expectations as to “realism” however, we used a visual style similar to a graphic novel. When the virtual world fades from the “standard time” of the mid-1980s back to the early days of the Wall in the 1960s, buildings fade to black and white to indicate a flashback. When the world fades forward into the “future” (i.e. 2007), the buildings become more photo-realistic, taking on the clean, restored look of post-Wall Berlin. We indicated the accessible part of the project area by texturing the facades of the buildings; where the buildings are untextured grey blocks, the virtual world has “come to an end” and semi-transparent walls prevent users from going further.

The “graphic novel” visual style gave us more artistic freedom with characters as well. As the purpose of uniforms is to obscure the individual, turning him or her into a symbol of state power, we used the same character for all officials of the same type, e.g. one character for all border guards. The mouths of the character do not move when they speak, but their voices are localized in 3D stereo space onto their figures, shifting to remain centered at the character when the user moves. We found we could even repeat more distinctive, unique characters such as the “Wall tourist couple” shown in Figure 3. As in medieval narrative paintings, they are perceived as being the same couple in different places at different times. [13]

6 Rhetorical Devices in the Navigation and Interaction Design

“Virtuelle Mauer/ReConstructing the Wall” is a spatial, first-person viewpoint narrative in which users’ movements through the virtual space carry them through the narrative structure of the piece. The dramatic structure is episodic, with each episode having a its own small dramatic buildup and release. Users are self-directed and can decide to simply explore the space, or to trigger depictions of historic events. To keep the user mentally situated “in the world” we wanted appurtenances for these triggers to be naturalistic parts of the virtual world, rather than signs or buttons. In past works Thiel has guided users through spatial narratives with open doors and pathways, but in the wealth of detail in “Virtuelle Mauer” naïve users rarely noticed these clues. We found that walking up to characters to “hear their stories” was a compelling mnemonic even for older, inexperienced users, and so use them now to mark most hot spots, where proximity sensors then trigger the events of the episodes. Each episode is predetermined and invariable, being the same whether users trigger them for the first time or multiple times in succession. How then could we create dramatic tension and user involvement?

Thiel has argued elsewhere that in interactive works the true character development happens in the users themselves. [3] As users go through the piece, the episodes accumulate and color their reactions to new experiences with memories of the past and premonitions of what could happen in the future. Although going through an episode does not affect the future, it does change how the user will perceive subsequent events. This is in fact the primary affective mechanism of the piece, as it arouses emotions in users’ by playing with their expectations. [14]

For instance in the episode in Figure 3, when the user approaches the characters the seemingly solid, realistic world suddenly changes dramatically, as houses torn down to enlarge the Death Strip reappear in a flashback to the 1960s. A rope hanging out an open window depicts an historic escape attempt, about which the “Wall tourists” then comment in German and English. From interviews with local residents we found this is how they actually experienced escape attempts, not like a TV crime show depiction but only seeing mysterious traces and hearing after-the-fact rumors of what had happened or might have happened. Given the sensibilities of the Berlin Wall victims groups, and wanting to reach a world-wide audience, we depict escape attempts primarily through abstracted visual enactments, with spoken stories providing additional information but not necessary to grasp the basic story.

Fig. 3. "Virtuelle Mauer/ReConstructing the Wall," escape seen from West Berlin.

In fact the ways in which these stories are related carry additional clues about how residents were treated differently in East Berlin and West Berlin. In West Berlin the "Wall tourists" talk about an escape attempt openly. In East Berlin one would not speak about such things in public. We therefore use silent children as the "trigger," such as in the escape attempt depicted in Figure 4, as East Berliners told us children had more leeway to approach restricted areas near the checkpoint and the Wall.

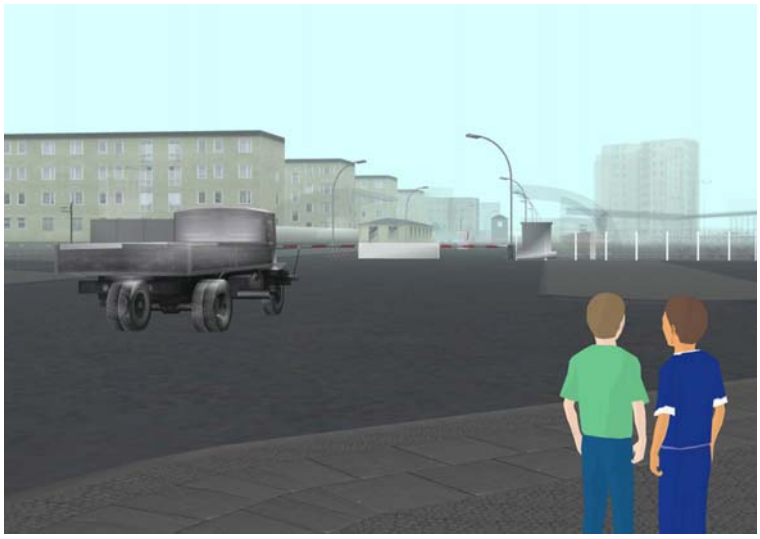

Fig. 4. "Virtuelle Mauer/ReConstructing the Wall," escape seen from East Berlin.

Freedom of movement is another radical difference in the experience of a normal resident of East Berlin in comparison to West Berlin – and users are always treated as residents of that part of Berlin in which they currently find themselves. Users are apparently free to explore the project area at will. If their own choices suddenly bring them into danger, however, and in that moment we take away their ability to move, the emotional shock of loss of control is very strong.

In West Berlin the Wall was a site of anarchic freedom, covered with colorful graffiti, and the neighborhood of Kreuzberg was populated by immigrants and alternative sub-cultures. In West Berlin, users' interactions with the virtual world of are free of consequences. Although users, being treated as local residents, are not allowed to cross at the checkpoint, they can come and go as they please even while the guard is talking, can go everywhere along the Wall and climb viewing platforms to peer into the Death Strip watchtowers and across to East Berlin.

The East Berlin district of Mitte, on the other hand, was a neat and clean residential idyll, but under stern and continuous state control. Older people who lived in East Berlin at the time of the Wall told us that they immediately recognized certain areas near the Wall as restricted zones and that it would not even occur to them to approach these areas. How could we communicate this "inner wall" to our carefree users who has never lived with the fear of attracting unwanted attention from the secret police?

When users overlook the subtle signs marking a restricted area and walk blithely into the zone they are immediately confronted by East Berlin police. As soon as the police appear, we take away users' control of the joystick. They are trapped.

Fig. 5. "Virtuelle Mauer/ReConstructing the Wall," East German police in front of East Wall.

The police take the users in for interrogation – an abstracted experience, with dim figures silhouetted against the glare of lights and loud, distorted voices. Compared to a real interrogation it is brief indeed, but East Berliners who have been interrogated by the secret police have told us we have managed to convey the feeling of threat and disorientation that they felt themselves.

Fig. 6. "Virtuelle Mauer/ReConstructing the Wall," screenshot: interrogation scene.

When the interrogation is over, the interrogator disappears, a door slams, and users find themselves in a vague, grey world that symbolizes their removal from normal society. We give them back control of the joystick, and they must find their own way back into the "normal" world.

Similar experiences await users at the East Berlin entrance to the checkpoint. The first time users approach a border guard we take away control of the joystick and hold them until the guard sends them away. If users obediently leave, nothing happens. If they however come back a second time (within 5 minutes) or approach a different border guard, they are taken in for interrogation. We have tried to reflect the constraints and compulsions of the real world, no more but no less.

7. Conclusions

"Virtuelle Mauer/ReConstructing the Wall" aims to provide an affective encounter with the Berlin Wall in an interactive 3D narrative installation. It uses relatively generic commercial hardware and software in order to provide an economical and robust system that can be shown in practically any venue where there is electricity.

In "Virtuelle Mauer" the user is not a tourist on a guided tour, removed from the day to day constraints of life in Cold War Berlin, but a resident subject to the contraints of life "in the shadow of the Wall."

The user is the protagonist, but we considered the entire virtual world itself to be the antagonist. Characters are used to justify and reinforce aspects of the virtual world rather than being the primary focus of a character-centered narrative. The interaction rhetorics are enhanced by abstractions in the visual and acoustic design of the virtual world that communicate subtle differences in the situation of the user, as an East Berliner versus a West Berliner, or during and after an interrogation. The interactive rhetorics used to create dramatic tension are technically very simple but emotionally very powerful, playing off the user's perceived freedom of movement with the reality of constraints and compulsions within the virtual world, in a situation not unlike real life itself.

The interaction rhetoric was refined by intensive observation of and discussion with users. The initial release of "Virtuelle Mauer/ReConstructing the Wall" did not include the interrogation sequences mentioned above. At the first showing of the installation (at the Museum of Communication in Berlin) East Berliners told us time and again how they knew instinctively not to even look at or approach the checkpoint or certain areas near the Wall – without ever having been directly told as children that it was "dangerous." We realized that more than the tangible, physical manifestations of state power visible at the Berlin Wall, with its watchtowers and guards, the formation and existence of this unconscious, intangible mental barrier was the most important experience to be communicated about the Berlin Wall. Interactive narrative is a unique – and perhaps the only – medium to teach people the reality of an internal, intangible constraint. After being stopped and interrogated several times for their "reckless" behavior, users will look more closely and think more carefully about what they should or should not do near the Berlin Wall in East Berlin. They will learn that their choices and their actions can have unpleasant, personal consequences.

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