

The Battle for Hearts and Minds: Interrogation and Torture in the Age of War. An Adaptation for Oculus Rift.

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Figure 1: A scene of *Hearts and Minds* in the CAVE2 environment.

Abstract

Hearts and Minds: The Interrogations Project is a Virtual Reality art installation developed using a novel method for direct output of the Unity-based virtual reality projects into CAVE2™ [Febretti et al. 2013] environment. This artwork incorporates original research and technological innovation in an adaptation of veterans' testimonies detailing US military interrogations in Iraq during the American counter-insurgency campaign in the early 2000s. It uses VR technology to immerse participants in the minds of people who experienced torture and interrogation during the war to understand its current social and psychological consequences. The powerful content of this artwork focuses on the impact of war and trauma on veterans, and utilizes the power of VR as a medium to evoke empathy, understanding and awareness. This work was developed at the Electronic Visualization Lab in Chicago through a unique cross-disciplinary international collaboration between artists, scientists, and researchers from five different Universities. The methods developed for this project allow hands-on education of virtual reality by letting students create their own virtual environments and exhibit them in the CAVE2 quickly. These methods have been recently adapted by Design and Computer Science courses at the University of Illinois at Chicago.

Keywords: virtual reality, CAVE2™, art, storytelling, interaction

Concepts: • Computing methodologies ~ Computer graphics ~ Graphics systems and interfaces; *Virtual reality*;

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1 Introduction

With the advancement of technology, virtual art gradually moved out of research laboratories and scientific centers into galleries, museums and public exhibitions. The Oculus Rift, Leap motion, Google Glass, Kinect, HoloLens, Unity, and other virtual technologies changing the way how contemporary VR art projects are developed and realized. VR art has however been consistently limited by the fact that there are no cross-platform standards allowing seamless portability of Virtual Reality Environments (VREs) and interfaces between various domains and technologies. The development of the portable versions of the VRE for different technologies became possible with the advancement of the Unity3D game engine creating multiplatform 3D interactive experiences. We describe the concept and the development of the Oculus Rift version of the virtual reality art performance *Hearts and Minds: The Interrogations Project* originally developed as the first performance using a CAVE2 environment.

One of the challenges for makers of immersive virtual reality artworks, particularly those developed in CAVEs, is that these artworks tend to be more often read about in the literature than experienced first-hand. The CAVE2 at the EVL for example is a graduate research lab facility with keycard access at the center of a large engineering building on the UIC campus. *Hearts and Minds* has been shown there at several special events and on specially arranged tours, but it is not the ideal situation for an artwork intended to reach a broad audience. While it is not possible to transport the large-scale CAVE2 environment, because *Hearts and Minds* was developed in Unity, it is possible to port the application to other platforms. In order to make the work more accessible for public, researchers, educators, veterans' groups and others particularly concerned with the issues highlighted by the work, the portable version of the project was developed for Oculus Rift platform.

2 Project Concept and Architecture

During the American-led counter-insurgency and counter-

terrorism campaigns in Iraq in the years following September 11, 2001, the torture and abuse of detainees was a commonplace tactic. However, there is little systematic research on the causal effects of violence on the memories, political attitudes, and psychology of American soldiers who were involved in the acts of interrogation and torture. As they were returning from wars in Iraq and Afghanistan, it has become clear that some participated in interrogation practices and acts of abusive violence with detainees for which they were not properly trained or psychologically prepared. The mental health impact of deployment during these wars is still being researched, as many veterans are at risk for developing chronic PTSD. Although the use of a VR for research and clinical treatment of PTSD is not novel, our project will allow exhibition participants to explore the psychological after effects and societal implications that torture and interrogation has on soldiers during war. The immersion provided by VR helps a participant to understand real world events and current consequences of interrogation and torture in the age of war through the minds of people who experienced them.

The structure of the project consists of nine VR Environments (VREs) linked together. The temple panorama, which is the entry point to the project, is positioned in the center. As the audience enters this space, they become acquainted with the four soldier characters who will be the focus of work, through monologues describing their reasons for enlisting in the military. The monologues are based on interviews of American soldiers conducted by political science researcher, Dr. John Tsukayama [Tsukayama J. 2014].

In *Hearts and Minds*, we navigate in 3D through ordinary domestic environments, such as a boy's bedroom, a kitchen, a living room or a suburban yard. In each of the rooms certain objects are "triggers"; when they are activated the room falls away and the scene moves to surreal desert landscapes, where soldiers recount acts of torture and its consequences. Each of the five rooms represents a different aspect or stage of the complex narratives of torture and its aftermath that the soldiers revealed. Four open doors allow participants to peak into ordinary domestic environments connected to this central panorama: a child's room, kitchen, living room and the backyard. Each connected room contains four interactive objects, the memory triggers, which serve as portals to the linked panorama environments. Users can click the objects using a virtual laser pointer to transport themselves into a surreal panorama connected to it, which is intended to represent a subconscious space of interiority, and to provide the audience with a sense of intimate communication with the voices they will hear. The room fades out and participants hear short monologues about the soldiers' wartime experiences. Once the story is complete, the war panorama fades out and users are transported back into the room. Once all four rooms are fully explored, the user is returned to the temple scene, which fades out to red accompanied by a heartbeat sound.

In the portable Oculus Rift version of the project, navigation is performed with typical first-person shooter interaction using an Xbox 360 controller. Instead of physically navigating through the CAVE2 space, movement is directly controlled by the joystick. Participants can look around inside the Oculus Rift headset and listen to the narratives through the stereo audio headset. Targeting of trigger objects is accomplished by using the orientation of the Oculus headset instead of pointing with the Wand in CAVE2. The performance navigation in which a performer could use his

physical position and orientation in the virtual environment by walking to interactive zones was converted into a first-person interaction in which the participant had to navigate to each interactive entry using the joystick on the controller. The immersion of the Oculus Rift virtual reality headset allows for a personal type of affective experience of the narrative, activated through the visceral immersion into the visual and auditory environment. The powerful content of this artwork focuses on the impact of war and trauma on veterans, and utilizes the power of VR as a medium to evoke empathy, understanding and awareness. This work explores the aesthetic possibilities of new visualization technology, confronts some terrible truths about prominence and alarming regularity of sanctioned torture and provides a platform for discussion about military interrogation methods and their effects on detainees, soldiers, and society.

3 Development and Technology

The VRE was developed using the Unity game development platform (Unity Technologies Inc., CA) and the getReal3D plugin (Mechdyne Corporation), which were linked together to produce a system that achieves a novel direct output of the interactive 3D environments in the CAVE2 environment. Current applications for CAVE2 environment typically use Omegalib: a specialized application framework for hybrid reality display environments. However, Omegalib lacks the video game level of interactivity that Unity provides. To synchronize Unity across the CAVE2 cluster we used the getReal3D plugin. User interaction was scripted using the Omicron input abstraction library developed by EVL [Omicron, 2016]. We developed a plugin to streamline the integration of any Unity 3D application in the CAVE2 system, which was not possible before. By providing a series of tools to simulate the virtual reality interactions of CAVE2, we now allow non-programmers like artists, designers and undergraduate science students with minimal programming experience, to develop projects without the requirement for high-level programming frameworks such as Omegalib.

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