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# East Beijing Road: Reimagining Archive as Repertoire in Asymmetric VR Interaction and (In)Visible Pasts


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*East Beijing Road* is an asymmetric VR installation that reimagines the stories of a building with a history spanning over 100 years in Shanghai, China. All residents in this building were compelled to move out due to an ongoing gentrification policy. I reconstruct a synthetic space based on 3D photogrammetry models captured in this building. The audience, both inside and outside VR, must use distinct interfaces, assume various roles, and experience different visual presentations to collaboratively achieve individual goals. Old and new, digital and analog, real and fictional, and virtual and physical elements interweave. The project's ambiguity regarding time and space addresses the perceptions of the past and present, the fluidity of archives, and the meanings of ruins. The asymmetric mechanism invites audiences to collaboratively unfold the story. This experience of resembling the past becomes a repertoire, as articulated by Diane Taylor. The asymmetrical design in interactive storytelling blends different times and spaces, allowing the re-enactment of the past through audience collaborative actions. Through the asymmetric interaction design in activating the archive, this project raises a question about the relationship between interactivity and the visibility of the past.

**Keywords** Asymmetric VR, Repertoire, Archive, Interactive Storytelling.
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## Description

### Background

In late 2021 and early 2022, I visited a historical building over 100 years old on East Beijing Road, adjacent to the Bund—a waterfront area and a protected historical district in Shanghai. Due to ongoing gentrification policies, all previous residents were forced to relocate. By using photogrammetry technology to reconstruct a virtual environment and leveraging an asymmetric mechanism for interactive storytelling, this project explores an original way of immersive storytelling, unfolding the relationship between interactivity and the archive. Different archival materials interweave in this reconstructed synthetic space, such as archive photos taken in the 1940s in Shanghai from the LIFE Photo Collection, music from "Spring in a Small Town" (1948), and interviews with the elderly who had lived in this building for more than half a century. The past is not a preserved order but is reformulated through audience interaction, channeling between past and present and fiction and reality.

### Concept and Context

Postmodern philosophers like Michael Foucault and Hal Foster question the stability, continuity, and completeness of archive; yet archive is a dynamic and evolving form. Terry Cook (2001) proposes a paradigm shift in archive science, encouraging a transition from perceiving archive as a static object to a process contributing to collective human and organizational memory. Wolfgang Ernst (2017) considers the archive as an entropy, representing a form of order rather than a fixed state. This process-oriented approach emphasizes the motion, particularly in the digital epoch, where archival materials are ephemeral and constantly changing. Re-enacting the stories happened in this historical architecture goes beyond preservation, but it forms as a physical and psychological experience of the past. Diane Taylor (2003, 20) introduces the concept of repertoire, mainly referring to embodied memory encompassing "performances, gestures, orality, movement, dance, singing – in short, all those acts usually thought of as ephemeral, nonreproducible knowledge." This stands in contrast to "archival" memory, which mainly pertains to written text in the Western context.

*East Beijing Road* aims to use asymmetric media design to re-enact the past. Asymmetry VR can be defined as "co-located users access the same virtual environment using different kinds of technology" (Ouverson and Gilbert 2021, 3). This project deploys the characteristic of asymmetric VR and provides an experience of unstable, unbalanced, and incomplete information among audiences inside and outside VR. The imbalances and incompleteness in media design are a metaphor for the fragmented time and space inherent in the archival practice of unveiling the past in the digital epoch. No complete information is visible without collaboration between the audiences inside and outside VR. It is an embodied experience that the past can only be revealed through collaborative interaction. The story of the building on *East Beijing Road* becomes a form of repertoire because of the collaborative engagements of the audiences.

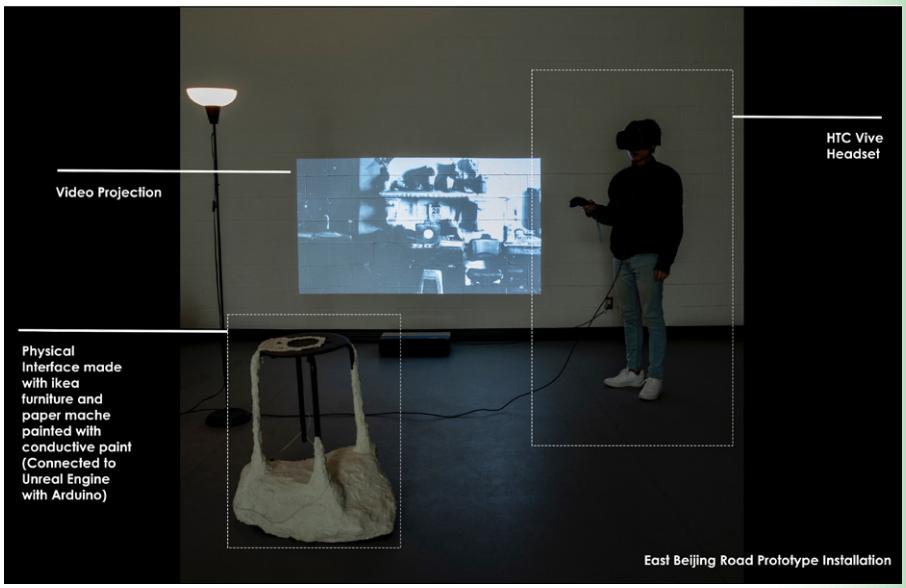


**Fig. 1.** *East Beijing Road* Installation Demonstration.

## The Installation

Before and after the residents moved out, I collected data including interviews with a long-time resident, utilization of photogrammetry technology for 3D data generation, and capturing digital photographs. Combining this data, I utilized the Unreal Game Engine and Blender to create a virtual environment that reimagines the stories of this architecture with collected data and archival visual images and sounds. Then, I used conductive paint to create a physical interface on the chair, which was then connected to an Arduino. By integrating the Unreal Engine with this physical interface, the VR project aims to reactivate the narratives of a vanishing building through audience interactions both inside and outside of VR. This installation includes three components as shown in the Fig.1: a VR headset, a physical interface, and a video projection.

### Asymmetric VR Interaction Design

The project's design incorporates three layers of asymmetry: different characters, visual presentations, and interfaces. The player inside the VR assumes the role of a person walking by the building, embarking on an explorative journey. The player outside VR takes on the roles of the "ghosts" who once resided in the building. Because of these different roles, the players see different visual presentations: those inside VR are embodied in a colorful rendered 3D environment, while those outside VR view black and white 16mm hand-processed film footage through projection. The interaction interfaces also differ: players inside VR use controllers to interact with the scattered "debris" in the synthetic virtual environment, while players outside VR touch the physical interface to facilitate the storytelling process.

Although players inside and outside VR having asymmetric information, they must collaborate to uncover the narratives. The player outside VR activates the "debris" by touching the physical interface, making them visible to the player inside VR who can then trigger the narratives by hovering over them with the controller. Once triggered, the player outside VR can view the revealed narrative presented in black and white 16mm hand-processed film footage through projection. These

narratives are initiated through a combination of two different forms of touches: physical touch with the hand and virtual touch with the controller. However, the player inside VR and outside VR cannot see the revealed narrative simultaneously. The player outside VR can only see the revealed narrative if they refrain from touching the physical interface, as touching it causes the projection to bleach and turn white.

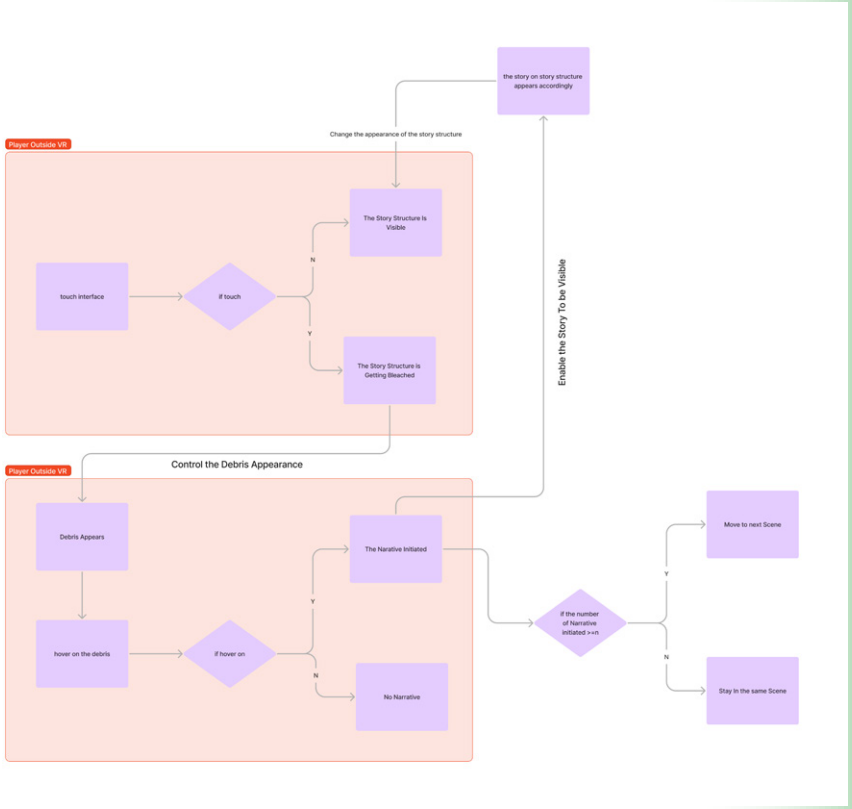


**Fig. 2.** Asymmetric VR Interaction Flow Chart.

**Fig. 3.** Left Image is the VR View of triggering “Debris”; Right Image is the Projection View After the “Debris” is Activated.


**Fig. 4.** The Left Image is the “Virtual Touch” by Using Controller to Hover on “Debris”; The Right Image is the “Physical Touch” by Touching Physical Interface.

### Touching and Visibility

Touch triggers the narratives, activates memories, and reveals archives, but it's not the action of one individual; it's a collective effort by two players inside and outside VR. Collective touching makes the synthetic and reimagined past and memories visible. In this project, touch isn't merely a simple input to make the story visible; it functions within a relational framework, transcending the one-to-one relationship between touch and visibility. The collaboration between the two players in interaction design renders touch liminal and relational. Without virtual touch, physical touch alone cannot reveal the reimagined archival narratives, and vice versa. This collaborative design renders singular touch impossible and impenetrable. The visibility of stories isn't solely enabled by the act of touching; it resides in the space in between touches. Despite the collective action enables the visibility of the narratives, different agents in this collaboration (player inside and outside VR) cannot view the triggered narrative simultaneously. This delay adds another layer of asymmetry, questioning the possibility of creating a stable shared visible memory. The collective action of making stories visible becomes a performance in activating the past, resonating with the notion of repertoire, which encompasses an embodied experience of the past.

## Conclusion

How is the past activated in interactive media design? *East Beijing Road* leverages asymmetric VR design to explore the visibility and invisibility of the past. By layering different stories happened in this area in different time periods, from long-time resident's stories to archival images taken at the beginning of 20th century, the assemblages of stories are interweaved through the actions of the players. The revealing is a collective action with two players inside and outside VR. More than an individual action in activating the past, this project reimagines the different forms of archives via relational touch interactions. The visible and invisible pasts are formed within the liminal and relational touches, which constructs a performative archive as a repertoire, the embodied memory in actions.

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