# Using Prisoner Artworks in 3D as an innovative multimodal entry point to engaging with Heritage of Nazi Persecution

## 1. Introduction

Prisoner testimonies exist in written form such as letters, diaries, and transcripts of oral histories. In addition, there is a large corpus of "visual testimonies" in the form of artworks created during and after the events of the Holocaust. In creating digital user experiences for preserving and disseminating these memories, written forms of testimony are typically used most. One notable exception is *Art Dachau*, (Hammermann et al. 2021) where prisoner artworks are used to accompany a written narrative based on multiple written sources. However, Art Dachau's virtual experience rather deploys artworks as historical documents like photographs as if they represent some "real" situation, in addition, only artwork snippets are used while full visual testimonies (complete artworks) are not accessible during the digital experience. Like Art Dachau, the focus of our project is using artworks as visual testimonies because they communicate 'memories' of victims immediately; unhindered by barriers of written language. Our explorable 3D modelling approach is however different insofar as we pay attention to the deeply subjective, artistic, and aesthetic dimension(s) of individual artworks and artists. By creating 3d model environment using prisoner artworks within "*MEMORISE*", (Memorise *, EU, 2022*) we offer a multi-perspectival interpretation of the artworks as a gateway to multi-dimensional experiences of *Heritage of Nazi Persecution* (HNP). By our novel approach to connecting visual and written testimonies, our project directly addresses the conference theme's focus on reinvention and responsibility, and reflects them from different perspectives.

Visual memories of prisoners count among the most gripping testimonies of HNP. Very often created under adverse circumstances, lack of proper materials, a studio or even a table, threat of persecution and on tiny bits of paper, however, the paintings and drawings reflect a great variety of different experiences. Besides portraits of inmates, various types of exterior and interior camp scenes are the most common types of visual testimonies. Many pictures made by prisoners during the Holocaust appear rather 'neutral' regarding the cruelties of camp life, whereas images created by survivors after the Holocaust seem to be much more 'clear-cut', e.g. showing execution scenes. Scholars have noted an interesting gender difference since women artists tended to concentrate on everyday activities whereas male artists preferred to draw the camp architecture or barrack interiors. (Rosenberg, P. 2002) It has also to be taken into account that the style of the artworks mirrors the personal style of the artist as well as the circumstances of creation, where artworks could become a means of "visual resistance". (Fig.1)
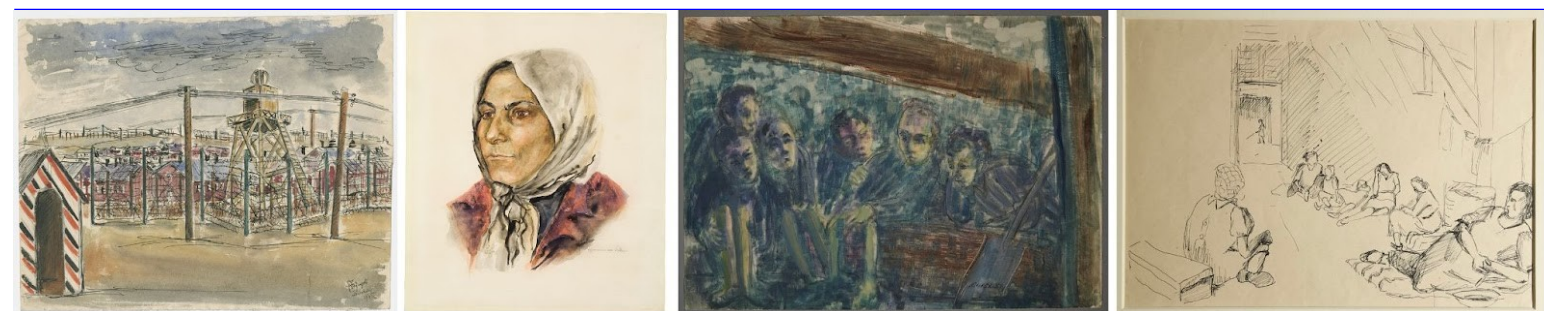


*Figure 1. Prisoner artwork examples (a) Feingold, Julian (b) Babbitt, Dina (c) Krugman Gurdus, Luba (d) Andrieux, Lili.*

## 2. Methodology

Previous work created digital reconstruction of different memorial sites using 3D models (Fig. 2a). They were based mainly on existing physical remnants, maps, and photographs. (Verschure / Wierenga 2022) These reconstructions, visualised and made explorable through extended reality technologies serve to show memorial site visitors how the camps once looked like, especially where few or no buildings remain (Fig. 2b). (Pacheco, D., et al. 2014 / 2015) They are enhanced with geolocated multimedia content provided by the memorial sites, including different kinds of testimonies. Prisoner artworks are geo-referenced as well and shown as 2D images in extended reality (Fig. 2c). With this new approach we aim to generate a more immersive experience, transforming 2D images of artworks into 3D environments as an extension to the reconstructions of Kamp Westerbork and Bergen-Belsen. The 2D artwork is always the entry point to a 3D guided tour, where users access art-historical biographical information, through curated camera views with annotations in text and audio form. In this virtual tour, users may be taken on a journey out of the artwork model and through a more abstract and contemplative space to view other artworks supported by curated excerpts from diaries and letters as well as photographs of collection items. The connection between visual and written testimonies is an important goal of this work.

Figure 2. Existing model of Bergen-Belsen (a) with resulting Augmented Reality tablet application showing the barrack buildings in context of an empty site (b), and a related artwork by prisoner Ervin Abádi (c).

## 3. A three-stage Workflow to Create a 3D Prisoner Artwork Model

The separate elements of the digitised artwork are isolated as 'cut-out' images. As the scenes are typically 2D perspective views, each element must be 'transformed' making a corrected orthogonal view. Where background elements are obscured by an object in the foreground, minimal 'cloning' of adjacent image detail is undertaken for the purpose of continuity in the background elements. ( Fig. 3 ). The isolated orthogonal elements are imported into the 3D modelling application SketchUp (Trimble, https://www.sketchup.com/ ) , where the 2D images are rotated, positioned and assembled to form a 3D representation of the artwork with the appearance of a virtual 'cut-out-paper model' ( Fig. 4 ). The 3D models are uploaded to the online hosting platform Sketchfab ( https://sketchfab.com/ ), which features a range of 3D and rendering settings. Central to our needs is the ability to create a series of annotations associated with custom camera positions, and when combined with SketchFab viewer API, curating the finished narrated virtual tour within a freely explorable 3D model ( Fig. 5 ).
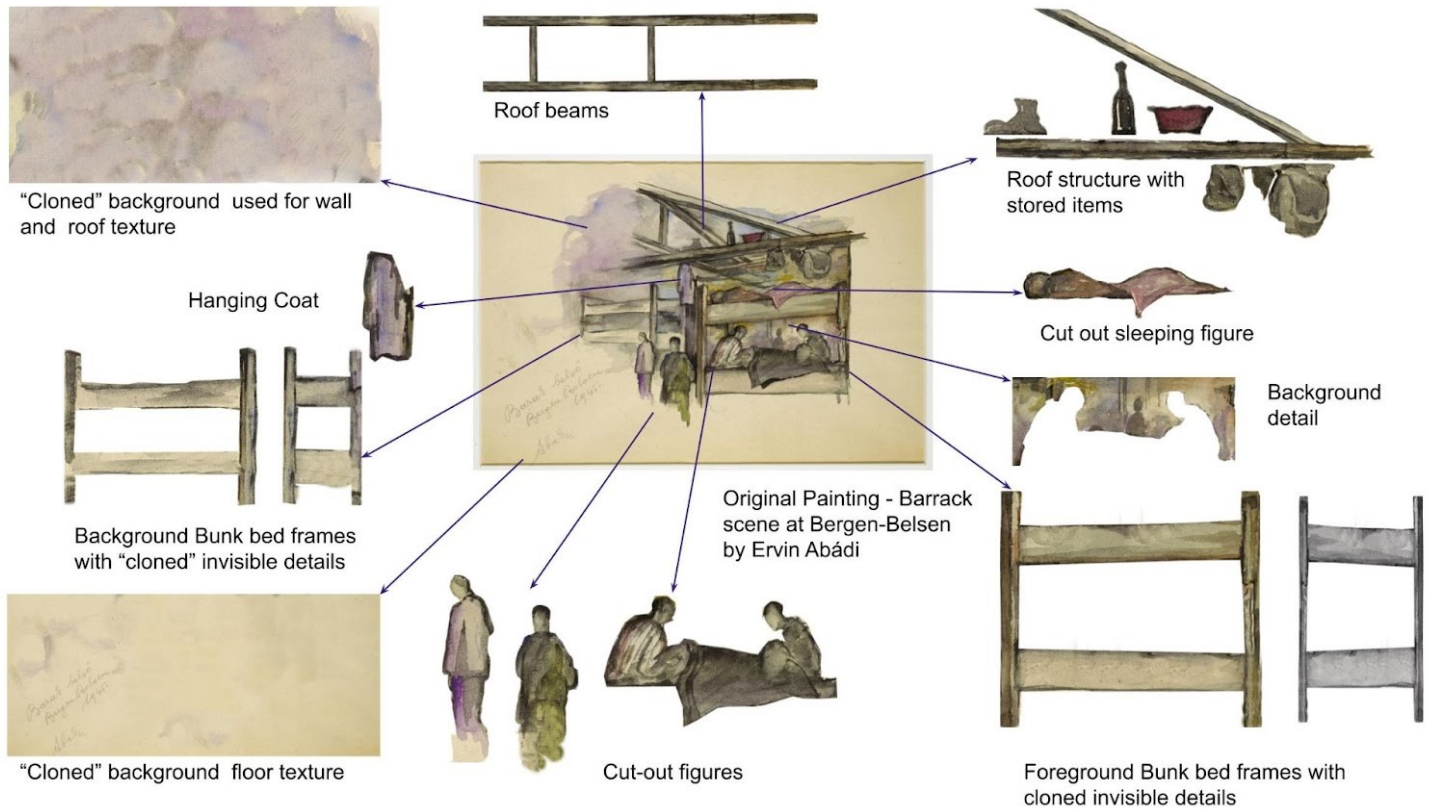


Figure 3. 3D workflow stage 1: Extracting and correcting 2D Images.

1. Duplicate 2D images in 3D model space

2. Rotate and mirror Shapes to form roof truss and bunk beds.
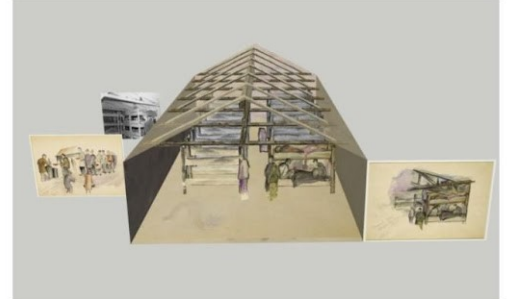
3. Add 2D figures and other items

4. Add duplicated items using greyscale images to denote structures which are not visible in original painting.
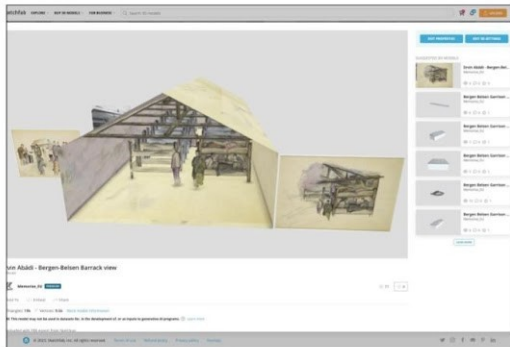
5. Add background textured planes to suggest the barrack's exterior 'shell'

6. Add original painting and supporting images, then export as FBX for upload to SketchFab.
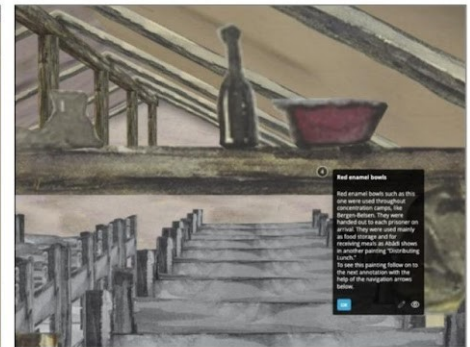
*Figure 4. 3D workflow stage 2: Assembling 2D image in 3D space*



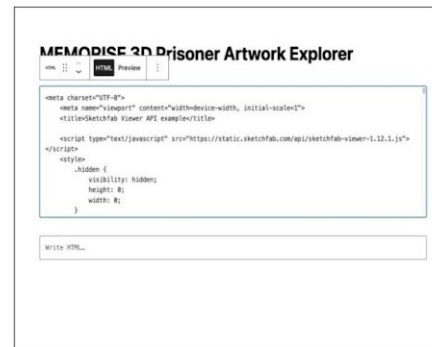1. SketchUp model Exported as FBX, Uploaded to 3D model web hosting platform SketchFab

2. Editing 3D settings allows the creation of a series of scenes with annotations
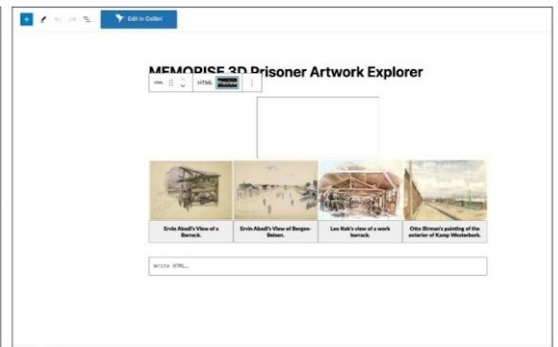
3. Annotation of painting details to create a narrative taking the user to another Artwork.

4. Painting by the Ervin Abádi showing the same red enamel bowls in use.

5. SketchFab Viewer-API on Memorise Website to create user interface.

6. Final SketchFab User interface now hosted on Memorise website.

*Figure 5. 3D workflow stage 3: Creating and presenting SketchFab Scenes.*

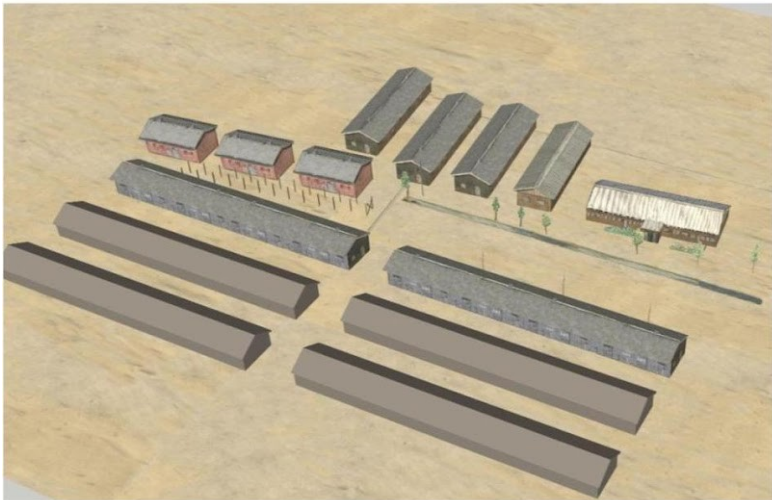# 4. Otto Birman's View of Kamp Westerbork

Our 3D approach applied to camp scenes depicted by artist Otto Birman shows how closely the artist painted the scene when compared to the original layout of the camp. This is evidenced by placing the 3D version of the painting onto the Kamp Westerbork historically documented layout plan. ( Fig. 6 ) A narrated tour of Birman's 3D artwork is accessible online. ( Sketchfab , https://skfb.ly/oWz9M ) For the Kamp Westerbork memorial, it provides the opportunity to bring the camp's past closer to visitors, making it literally and figuratively touchable. According to audience research, it therefore meets the wishes of many visitors for a more visual representation of Holocaust-related places. Our approach overcomes the danger of three-dimensional visualisations of former concentration camps, which creates a decisive and powerful image of a camp yet representing only one perspective on historical reality, (1) by allowing the reconstructed campsite model to be overlayed with perspectives of different artists, and (2) by using annotations, allowing visitors to explore the context of the depicted barracks or the personal background of the of the artwork's creator. ( Fig. 7 )
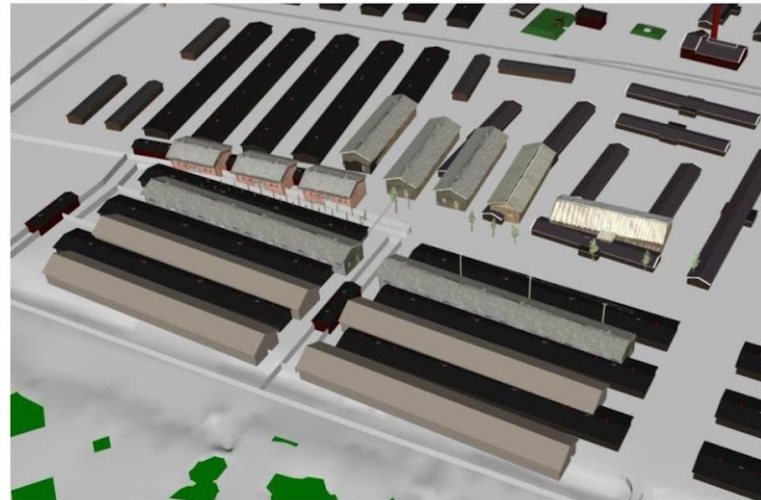


1. Original Otto Birman Painting
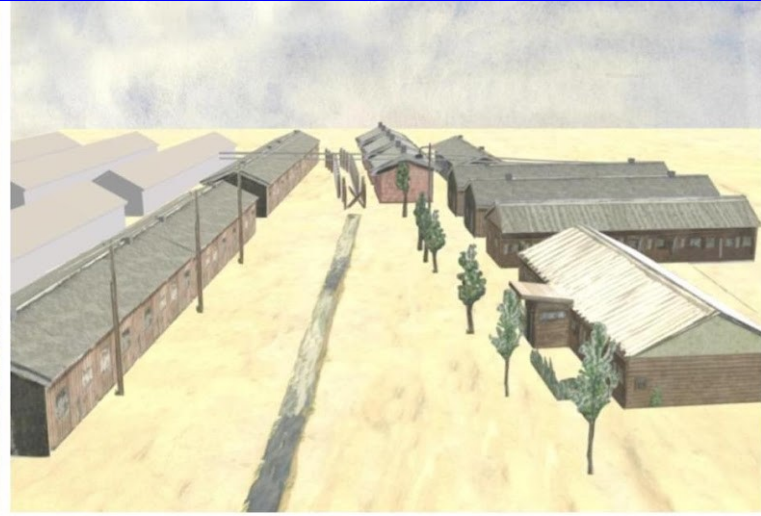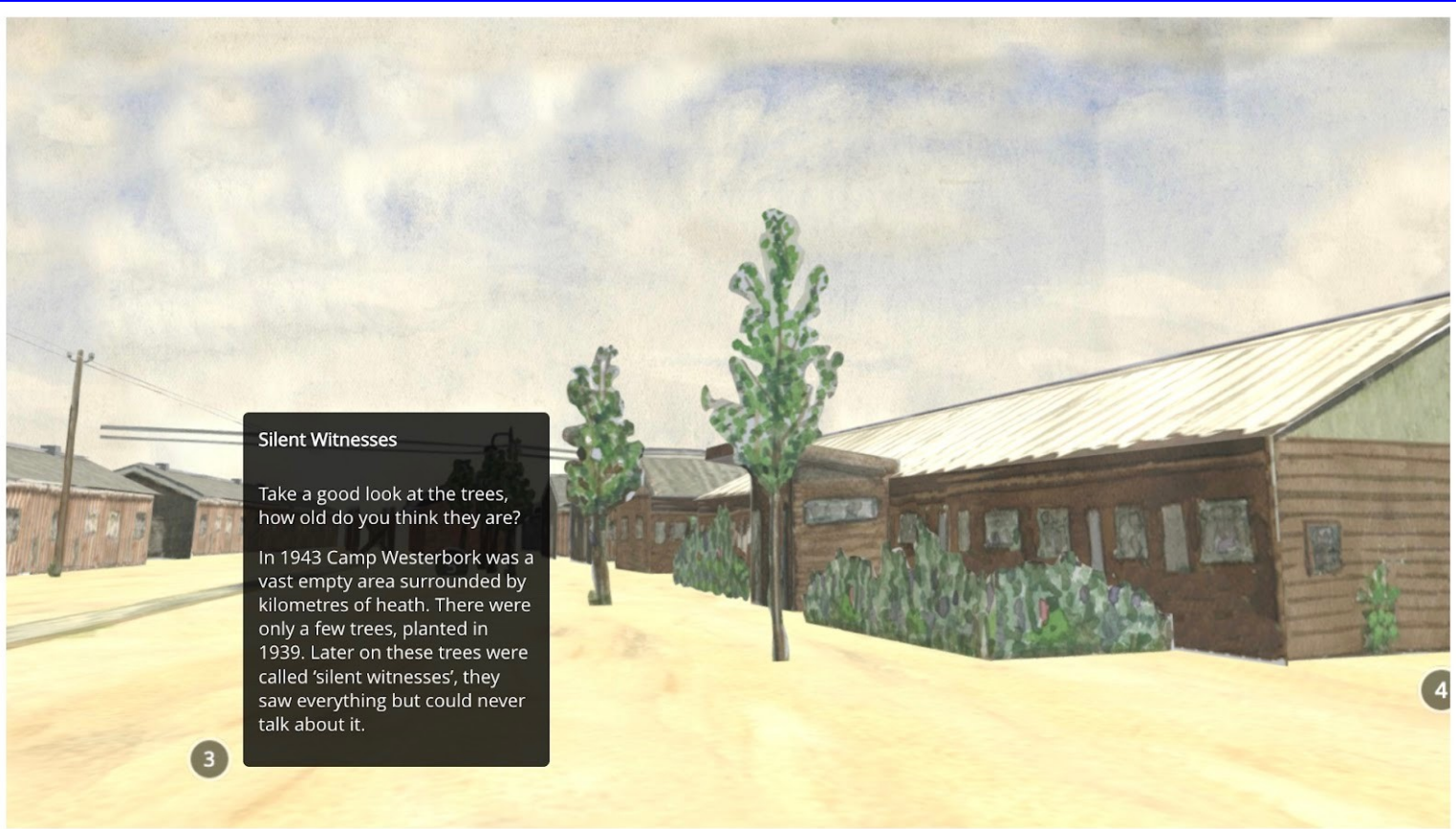
2. Otto Birman Painting - 3D model view

3. Otto Birman Painting 3D model overview

4. Kamp Westerbork - part of the existing 3D reconstruction

*Figure 6. Sequence from Painting to 3D model and existing reconstruction of Kamp Westerbork*

**Otto Birman View of Camp Westerbork**
3D Model

*Figure 7. Annotated scene from Virtual tour of Otto Birman's painting at Kamp Westerbork 1943*

## 5. Ethical Guidelines

The outlined digital storytelling technique is part of a broader evolution in Holocaust studies towards more creative approaches to communicating and remembering HNP by digital means.Ebbrecht-Hartmann,et al. 2023). However, the incorporation of digital technology poses ethical challenges, given the sensitivity and complexity of the subject matter. (Makhortykh, M. 2021); (Makhortykh et al.  2022) The ethical guidelines are based on our experience developing a Holocaust-related 3D model with specific focus on a model driven by prisoner artwork(s):

- **Respect, Sensitivity, and Dignity**: The subject matter must be approached with the utmost sensitivity, recognizing its profound emotional impact on survivors, their families, and the broader community. This includes carefully handling copyrights and acquiring informed consent from relevant stakeholders.
- **Subjectivity vs Multifaceted Purpose:** Each artwork represents a unique reflection of an individual's journey, encapsulating aesthetic choices that extend beyond mere visual 'reportage' of camp life. While these artworks can serve as starting points for exploration of the artist-prisoner's biography, their artistic decisions, and the subjects or objects depicted, they can also serve as launchpads towards a deeper understanding of the broader camp experience.
- **Educational Primacy**: The artistic realm has the potential to captivate curiosity and stimulate the imagination. There should be a clear justification for selecting a specific artwork as a model, and it is imperative to ensure that the primary focus remains educational and commemorative, steering clear of any tendency towards entertainment or sensationalism.
- ' **Meeting point**': The artwork should be included holistically, interconnecting diverse individual experiences and traumatic fragments that characterise the HNP, (Stiassny /Henig 2022) using sources like testimonies, diaries, historical information, and archival sources.
- **Inclusive Storytelling:** Since digital technology tends to amplify social biases, (Floridi L. 2023) space must be given to the voices and stories of underrepresented victim groups and mnemonic communities. (Ebbrecht-Hartmann et al. 2023)
- **Imagination, Authenticity, and Historical Recreation**: Creating a 3D model based on prisoner artwork demands careful decisions regarding historical accuracy. Considerations include whether or not to 'fill in' missing spaces within the artwork, to geo-locate the artwork when a specific location is uncertain etc. all of which must be approached thoughtfully and transparently.
- **Interactivity**: The choice to present the model as a walkthrough experience, where the viewer observes passively, or to encourage interactive engagement should be context-dependent.

## 6. Conclusion

Within MEMORISE , we are developing workflows for HNP memorial sites, for their in-house teams to create digital educational experiences following practical and ethical guidelines. In the case of 3D artworks, we are developing methods for creating online and onsite user experiences by trialling, utilising and combining readily available, free or low cost digital online tools. To date, a selection of 3D tours based on prisoner artworks, called " Visual Memories " have been prototyped and have been under evaluation by focus groups and as on-site user activities, at Kamp Westerbork Museum, Nov 2023-Feb2024 ( Fig. 8 ); they are also available online. (MEMORISE, https://memorise.sdu.dk/3d-prisoner-paintings/ )



*Figure 8. Evaluation of 3D approach at MEMORISE Exhibition at Kamp Westerbork Museum*

# 7. Acknowledgements

# Appendix A

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