

Flux Garden—a Poetic Memory of a Lost Garden in VR

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Abstract

The room-scale VR experience *Flux Garden* is a poetic reference to a former Chinese Garden in Singapore. Spatialised music compositions accompany the spirits of dancers and turn each walk through the impressionistic dream-like landscape into an individual and unique experience.



Fig. 1. *Yunnan Garden VR – Flux Garden*, Seide, Reinhuber, Williams, still image from VR experience, © 2020, the authors.

Flux Garden

Based on intensive research on how to capture and digitally re-create and represent the former Yunnan Garden on NTU campus in Singapore, the project created the immersive 360° experience *Secret Detours* (2017) and the room-scale VR experience *Yunnan Garden VR* (2019), a realistic 3D re-creation of the former garden which served as a platform for different applications of which *Flux Garden* (2020) is an expressive approach, incorporating dancers and audio-compositions in a partially realistic and partially impressionistic representation of the garden.

The conceptual background is based on the observation that many of the impressive tropical trees had to make room during construction of the new garden. In our interpretation, abstract dancers symbolize a reincarnation of the logged trees, most of them hiding in grave-like caves. The abstract landscape of roundish caves are fragments of the trees based on their 3D reconstruction from photogrammetry with insufficient data. The environment is the result of experiments combining abstract and realistic elements, leading us to merge a low-resolution 3D reconstruction with our accurate re-creation, resulting in an impressionistic dream-like memory of the garden (fig. 1).

The *Spirit Dancers*: Motion Capture and Particle Simulation

As a reference to our first approach to fuse performances with immersive 360° captures of the garden in *Secret Detours* (2017), we again worked with Choreographer Susan Sentler to motion capture expressionistic dance performances with a camera-based Vicon system. A composition of real-time particle simulations surrounding and emitted by the dancers, resulting in a slowly disintegrating and then accumulating particle field allows the audience to observe a spiritual representation of the performances (fig. 2). 13 variations of performances and colors are scattered over the fragmented landscape, inviting the audience to meander and explore its secrets.



Fig. 2. *Yunnan Garden VR – Flux Garden*, Seide, Reinhuber, Williams, dancer with particle simulation, © 2020, the authors.

Spatial Music

Music plays a key role in immersion, navigation and driving user engagement. Since many of the dancers are only visible while within the roundish caves, music helps entice users to explore inside the abstract forms within the garden. At any moment a user might experience fleeting moments of music emanating from multiple directions and a musical treasure hunt was imagined with the user invited to find all the 13 dancer's locations and their accompanying music. As they investigate the garden, they are constructing their own meta composition from the music they discover. While each composition is unique, it is related to the whole through harmony or rhythm or melody. Precisely adjusted attenuation and EQ curves are employed to place the spatial music quite specifically in each location but also to allow it to filter into the surrounding area. Moving closer to a dancer increases the volume and affects the equalization of the music. Standing directly in front of (or even within) the particle dancer the user is fully surrounded by and immersed in the music.

Conclusion

While a painstakingly executed approximation of the vanished park informed our operations, reminiscing on the lost landscape taught us something further. Rizzo and Mignosa argue in the "Handbook on the Economics of Cultural Heritage" (2015) that narrative involvement is crucial for the success of Virtual Heritage applications. We argue that creating an audio-visual interpretation of heritage may also successfully benefit the engagement and

involvement of the audience. Our approach is an artistic one, in that we are combining realistic and abstract elements of the garden into a new work. Beyond the preservation aspect of the *Yunnan Garden VR* experience, *Flux Garden* offers an interpretation of heritage with the aim of benefitting the audience's emotional involvement.

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References

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Biographies

The authors currently teach and research in Media Art, **Benjamin Seide** and **Ross Williams** at ADM, The School of Art, Design and Media at NTU Singapore, **Elke Reinhuber** at the School of Creative Media, City University of Hong Kong. With their experience and specific expertise in the areas of sound design (Williams), computer animation and visual effects (Seide) as well as camera and concept (Reinhuber), they explore the fascination and possibilities of immersive media from different points of view, especially in regard to representations of culturally relevant subjects.