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## Collaboration in a virtual reality artwork: the experience of co-presence, co-creation and letting go.

Julien Lomet<sup>1</sup>, Ronan Gaugne<sup>2</sup>, Cédric Plessiet<sup>1</sup>, Joël Laurent<sup>3</sup> and Valérie Gouranton<sup>4</sup>

<sup>1</sup> INReV - AIAC (EA4010) - Université Paris 8, France

<sup>2</sup> Univ Rennes, Inria, CNRS, IRISA, France

<sup>3</sup> Université Rennes 2, France

<sup>4</sup> Univ Rennes, INSA Rennes, Inria, CNRS, IRISA, France

Collaborative virtual spaces allow to establish rich relations between involved actors in an artistic perspective. Our work contributes to the design and study of artistic collaborative virtual environments through the presentation of immersive and interactive digital artwork installation, named “Creative Harmony”. In this project, we explore different levels of collaborations proposed by the “Creative Harmony” environment, and we question the experience of several actors immersed in this environment (Fig. 1).

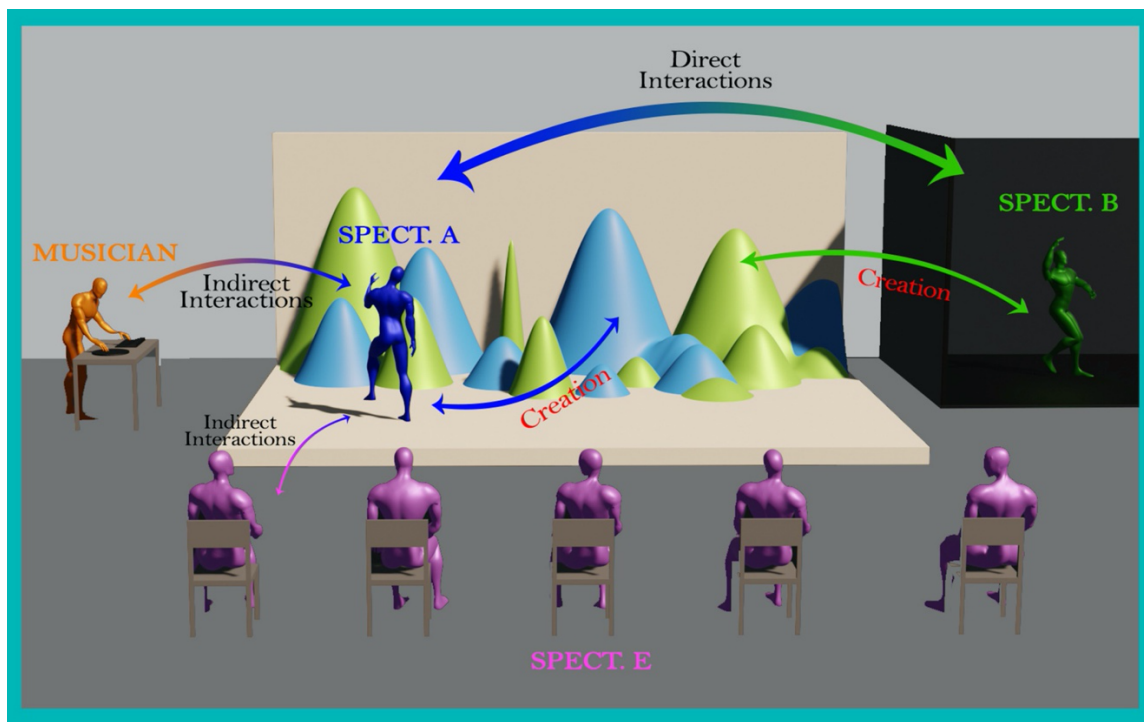


Fig 1. The different actors and roles in the Creative Harmony experience

The first level of collaboration is related to the co-presence of actors who share the same virtual space at the same time. The second level relies on a co-creative phase of a live virtual artwork between the artist, the performers and the spectators all connected in real-time to the collaborative environment "Creative Harmony". The last level corresponds to the access to an emotional state of letting-go experienced by the actors engaged in a shared session of “Creative Harmony”.

The collaborative artwork “Creative Harmony” was designed within a multidisciplinary team of artists, researchers and computer scientists from different laboratories. The “Creative Harmony” experience is based on a live performance that involves a dancer, a musician, and collaborative spectators who are engaged to the experience through full-body movements. The performance is structured around three phases, one introductive meditative phase to discover the universe of “Creative Harmony”, one active phase of co-creation of a shared landscape whose aesthetic is inspired by the German Romanticism painting from 19<sup>th</sup> century (Fig. 2), and a last phase of contemplation of the co-created landscape. In order to foster co-presence, each participant of the experience is associated to an avatar that aims to represent both its body and movements. The music is an original composition designed to develop a peaceful and meditative ambiance to the universe of “CH”.



Fig 2. The Creative Harmony landscape in the co-creation scene

One originality of the “Creative Harmony” experience is the exploration of the “letting-go” of the spectators. We propose to try to define and characterize this complex state of emotion and to present how the “Creative Harmony” experience intend to conduct the spectators to reach it. Through the analysis of this experience, we propose a model of letting go resulting from immersion and interactivity, taking into account the collaboration, the curiosity of creation, the involvement of the spectator in the interactive process and the contemplation of the resulting virtual environment.

The Creative Harmony experience was exhibited during the international festivals Ars Electronica festival in Linz in 2020 (Fig. 3), LEV in Spain, in 2021 and Recto VRso in France in 2022 (Fig 4)





Fig. 3: Creative Harmony in Ars Electronica's Deep Space



Fig. 4: Creative Harmony in the Recto VRso festival in Laval Virtual