The 8th Continent - A Participatory Interactive Art and Gaming Experience for Reclaiming Public Screens

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Abstract

The 8th Continent is an interactive art experience with gamified elements that foster public dialogue about plastic pollution. In the 21st century, plastic pollution has emerged as one of the most severe environmental issues. The work, through an immersive 3D environment inspired by the Great Pacific Garbage Patch, enables the participants' engagement as content creators to form an inclusive digital space for knowledge sharing and community expression. By featuring voice recordings from participants and reclaiming public screens used for advertisements, this work explores the potential of participatory knowledge to establish a decolonized space for ecological discussions.

Keywords

Interactive art, participatory content creation, video games, sustainability, plastic pollution, immersive art, collaborative computing

Introduction

Having reached the world's most isolated and remote locations, such as Antarctica, the Marinara Trench, and Mount Everest, plastic pollution is more prevalent than ever [1,8]. The pervasive challenge of plastic pollution highlights critical questions about our current capitalist consumption and production practices. Despite the efforts of the recycling, reuse and zero waste movements, pollution levels are still increasing. Ironically, as most single-use items are made from a material that persists in nature for centuries, waste accumulates further. For example, plastic water bottles take for 450 years to degrade in nature [16]. Plastic packaging contributes to greenhouse gas (GHG) emissions throughout its life cycle, including production, transportation, use, and disposal. Plastic packaging is responsible for 3.4% of global emissions – with 90% of these emissions coming from their production and conversion from fossil fuels.

The current practices of shipping plastic waste to developing countries further exacerbate ecological injustice and inequality faced by vulnerable populations [2] . Plastic pollution is a pervasive issue that transcends social and cultural backgrounds experienced by individuals from all walks of life. As plastics continue to infiltrate our environments, bodies, and even human and animal bloodstreams, it is inevitable for individuals to experience feelings of entrapment, helplessness, and despair.

By merging participatory expression with digital interactive media to construct a decolonized space for ecological discourse regarding the current state of plastic pollution, *The 8th Continent* invites the public to share their experiences, ideas, sentiments, and fears about this challenge. The work is designed for public screens to allow the public to explore and clean up a constructed digital world destroyed by waste, hear the voices of the people affected by pollution and contribute to the discourse as content creators.

Background

Participatory Arts

Participatory art as a community-engaged art form encourages the audience to transcend viewership by participating in the creative process and public dialogue [7]. Participatory arts offer essential benefits for public engagement in ecological issues and meaningful actions for environmental betterment. When the audience is invited to participate actively as creators in a sustainability-based artwork, participants can engage with a sustainability issue on multiple levels—cognitive, emotional, and behavioral [4]. Such artistic creation and embodiment can allow participants to form deep emotional connections and first-hand experiences with the environment [13].

Furthermore, participatory models enable new community dialogues to emerge and amplify voices from diverse communities. These dialogical spaces allow the articulation of shared values, experiences, and beliefs crucial for any environmental challenge responses on the ground. Due to these benefits, previous design studies in sustainable computing [12] and human-computer interaction [5,17] highlight the inclusion of participatory design as an essential tool that can integrate diverse and inclusive elements into digital forms of knowledge dissemination.

Public Screens

Digital displays such as billboards, information kiosks, or LED video walls have become powerful elements shaping public urban spaces. Advertisers and corporations often exploit this medium to promote consumerism and monopolize people's attention. Advertisers can effectively penetrate the collective consciousness and blur the boundaries between the public and commercial spheres by placing these screens in high-traffic areas, such as shopping districts, transportation hubs, and city centers. Such reinforcement of consumer culture in the public sphere can further exacerbate environmental issues such as plastic pollution. However, these screens have the potential to go beyond being sole displays of advertisements by reintegrating art, activism, and aesthetics into people's everyday experiences. Public screens positioned as activist art interventions challenge commercial narratives and engage the public in critical dialogue, about current environmental well-being. They can provide a public discourse that focuses on the past, present and future to formulate critical needs for immediate community action [10,14,15]. The artwork uses a participatory approach to allow pollution, one of the most critical challenges of today, to enter the public discourse and allow alternatives to prevalent capitalist consumption. It gives voice to people in public spaces through the creation and dissemination of content to be displayed on such screens.

Design and Development

Concept

The 8th Continent is a public interactive art experience with gamified elements. It was created to become a digital space where people can share and spread their experiences and emotions around the global problem of plastic pollution through creating audio recordings. Pollution caused by plastic is harmful to wildlife and humans. While the current public domain and scientific community heavily highlight marine species suffering from plastic garbage, land species remain often overlooked [3,6,11]. The work aims to raise awareness and provide educational content by showcasing vulnerable animal species affected by plastic pollution and visualizing our responsibility to take immediate action.

3D Environment Development

The virtual environment draws inspiration from the Great Pacific Garbage Patch [9]. This landscape reimagines the garbage patch within a cold setting, where a glacier formed by frozen trash forms the 8th continent, and creatures inhabiting the land are frozen and trapped by plastic debris. AI and 3D technologies were heavily used to create such a unique landscape texture. To convey the impression of plastic bottles trapped beneath the frozen surface, a base pattern of water bottles was generated using DALL-E. This AI image was blended with an ice texture and baked into a high-resolution diffuse image in Blender 3D. To create the normal and height maps of the texture from the diffuse texture, Materialize software was employed. Finally, plastic bottle objects were scattered around to provide extra dimensionality to the terrain texture.

A massive billboard screen is placed at the center of the landscape to serve as a world-based user interface. Its purpose is to relay instructions to the player seamlessly. Upon interacting with the animals, the participant quotes are also visualized on the billboard, allowing these impressions to gain permanence and significance. By displaying participant quotes within the virtual environment, the artwork emphasizes the reclamation of digital spaces that are typically used for commercial purposes and do not accommodate public voices.

Figure 1. Billboard screen is featured in the environment to display the participant quotes.

Interactions and Controls for Public Screens

The artwork was specifically designed for public screens, targeting the public as the intended audience. As long as it is connected to an external computer, the work can be viewed on any form of display. This includes LED advertisement screens, billboards, and projector-based installations. We envision that anyone who passes by the screen can interact with the artwork and participate. To accommodate participants' busy lives and responsibilities, playtime has been kept to 5 minutes. The artwork is created around a loop-based narrative that restarts itself for the next viewer to enjoy the experience. To ensure accessibility for individuals of all ages and levels of gaming experience, the interactions have been designed to be straightforward. The game only requires players to navigate the environment using basic controls (move forward, back, left, right and turn around), making it easy for anyone to participate and enjoy the experience.
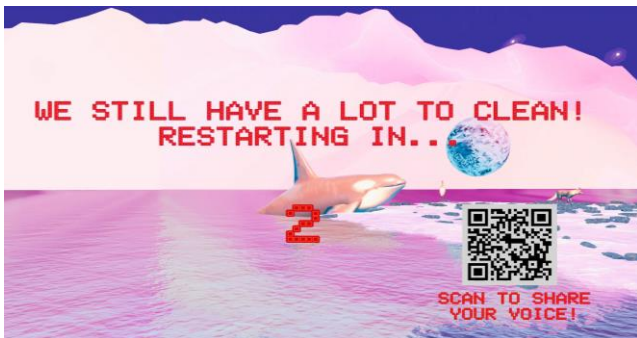

Figure 2. End of game scene that restarts the game and displays the QR code that leads to a voice recording website.

The work can be experienced by one player at a time, and it can be controlled via a generic game controller or a mobile phone. The mobile controller is developed through a website which can communicate with the Unity application through WebSocket API to enable players to control the screen from their devices.

Figure 3. A person interacting with the artwork using their mobile device.

Participatory Content Creation

Through the inclusion of voice recordings, the artwork allows viewers to become content creators. Prompting the audience to provide personal insights or statements about sustainability issues adds a contemplative layer and encourages active engagement that extends beyond passive viewing or interactive experiences. Through a QR code displayed at the end of the experience, participants can share their voice recordings to be included in the digital public dialogue provided by the game.

The QR code leads to a website where participants can record their voice and upload it to a database. Once the voice recording passes through a manual editorial and quality check, it gets published in the virtual environment. To feature the participant quotes, voice recordings were selected as the primary media as these files would not only elevate public voices, but also display a diversity of expressions, sounds and accents that could not be achieved otherwise. By capturing the essence of a variety of voices, the project created an organic soundscape. The featured recordings were used to create a virtual world that reflected the collective uncensored public voice.

Conclusion

This paper presents the development of a participatory art experience that challenges the prevailing consumer culture narrative and encourages critical reflection on our relationship with the environment. It achieves this by transforming public spaces, traditionally dominated by commercial interests, into platforms for ecological discourse. The project's participatory content creation aspect, facilitated through voice recordings, adds a personal and contemplative layer to the artwork, encouraging a deeper emotional connection with the issue of plastic pollution. The use of voice recordings as a medium for participant expression not only amplifies diverse voices but also creates a virtual soundscape that captures the essence of shared experiences, emotions, and perspectives. This democratization of content creation fosters a decolonized space for ecological discussions, breaking away from conventional top-down modes of communication. By subverting the typical use of public screens for commercial purposes, this study aims to demonstrate the importance of providing a platform for the dissemination of knowledge, fostering a sense of shared responsibility for addressing the global challenge of plastic pollution.

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Bengi Agcal is a multimedia artist and researcher. She earned her BEng in Computer Engineering from the Hong Kong University of Science and Technology. She is currently pursuing her MFA alongside the NSERC CREATE Immersive Technologies program at the University of British Columbia. Her research interests and art practice include speculative fiction, participatory design, 3D rendering, digital sculpting, XR technologies, web computing, immersive technologies, and sustainability. Her works have been exhibited and presented at Hong Kong, Japan, Korea, Canada, and Portugal.

Dr. Aleksandra Dulic is an artist-scholar working at the intersections of interactive multimedia installation and live performance with research focus in cross-cultural media performance, interactive animation and computational poetics. She has received a number of awards for her short animated films and interactive media works. Her work is widely presented in exhibitions, festivals, conferences and television broadcasts across Europe, Asia and North America. These works include films, animated media performances, interactive computer installations and software tools for interactive animation. She is active as an artist, curator, writer, educator, teaching courses, presenting and publishing papers across North America, Australia, Europe and Asia.