STACK SPACE:
A Social Art Studio in VR

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KEYWORDS

situated, embodied, social, technology, virtual reality, critical response process, agency, sharing, art, creativity, internet, digital, sculpture, 3D scanning, mobile, remote, access

CONCEPT

There is a lack of social and embodied creative spaces online, especially those allowing for real-time collaboration and interactivity. While social media sites like YouTube and Tumblr allow for sharing large amounts of visual media and ideas, none of these spaces involve spatial awareness or agency driven by the users' entire bodies. The experiences also remain mostly asynchronous, with linear and text-based communication as the primary interaction. Stack Space is a research project that aims to close the gap between what happens when people create sculptural objects in their local spaces, and what is needed when those creations

are ready to be shared (and even co-created) with other people across long distances over a wide-reaching digital landscape like the internet.

Visual artistic production, especially sculptural, involves the encoding of nonverbal information stored in the body by the enactment of bodily movements with analog media in a three dimensional space. The encoding that goes on in this process captures important subconscious information that the body communicates intuitively, using a full range of sense, motion and affect. Traditionally, this process has been done by artists alone in their studios, and the social transmission of the ideas happens at a later time when the objects leave the studios and enter spaces like galleries, museums, press releases and online media feeds. Using the interface of networked, wearable, virtual technology, Stack Space will have more direct access to that same nonverbal, bodily information usually restricted to private artistic processes.

Stack Space would be a kind of virtual-reality, social art studio, where users could meet and collaborate in three-dimensional spaces, bringing their 3D-scanned sculptural creations with them, and letting their creations be seen, interacted with and even stacked and attached together. Stack Space will simultaneously eliminate the barrier of geography that bias our sculptural experiences to physical objects that are either in close vicinity of our daily lives or that we can afford to visit, while also making those objects virtual and thus unbreakable and welcoming of handling and manipulation.

This project will explore the possibilities that arise by expanding the field of the types of media that can be shared by people at a distance. The hope is that critical discourse around object-making and ideas can reach wider audiences and have broader impact than the traditional distribution models have allowed for in the past.

USER EXPERIENCE

We hope for the Stack Space environment to feel like a messy art studio or sandbox, strewn about with virtual objects and with plenty of leftover space in which to place and rearrange them. Users would be both artists and viewers, entering the shared studio together to look at the objects, create with the objects and talk about them together. The Stack Space would ideally persist from session to session, keeping a spatial record of the work created within it, welcoming continued use to allow the artists, viewers and objects to mature in response to discourse and creativity over an extended period of time.

Artist/Collaborator

For an artist sharing their work, the experience would involve creating the initial artwork in an offline space and then scanning it into the Stack Space environment for interaction with other users. The steps might include some or all of the following:

1. Creating the initial artwork - e.g. creating a sculpture out of clay or paper
2. 3D scanning the artwork - e.g. using something like 123D Catch or Sense
3. Entering Stack Space - logging into the Stack Space website
4. Uploading the initial artwork - e.g. via a web interface
5. Exploring and manipulating the artworks - e.g. using the HTC Vive headset and manual controllers to explore the virtual studio and rearrange the virtual objects
6. Chatting and interacting with other artists - e.g. using voice chat to discuss objects and share critique and reflection
7. Returning for more studio time - logging back into the Stack Space website days later to continue the work and conversations

Viewer/Collaborator

For a viewer entering Stack Space, the experience might involve signing into Stack Space and exploring the studio landscape, hopefully with other users present with the goal of encouraging conversation about the objects in the space. The steps might involve some or all of the following:

1. Entering Stack Space - logging into the Stack Space website
2. Exploring and manipulating the artworks - e.g. using the HTC Vive headset and manual controllers to explore the virtual studio and rearrange, enter, view and dissect the virtual objects
3. Chatting and interacting with other artists - e.g. using voice chat to discuss objects and share critique and reflection

TECHNOLOGY

Alpha

Our first experiment will involve adding social capabilities (voice chat) to the eleVR drawing VR app, which is written in three.js. We will search for JavaScript libraries that support voice chat and try to combine them with the existing drawing app. Alternative technologies will also be explored for creating the Stack Space in addition to three.js, including Unity. The goal will be to make the technology as open source as possible, to encourage collaboration with other developers and users.

Beta

The next stage of experimentation will involve adding features to allow uploading and manipulating 3D models in the space. Digitizing of analog sculptures will be attempted with either 123D Catch or Sense. Manipulating and viewing of the digitized sculptures will be done via the HTC Vive controls in JavaScript. Other technologies will also be explored for capturing scenes and objects and for viewing and manipulating the VR spaces, including Structure and Hololens.

Future Work

Once collaboration feels successful within Stack Space in real time, we will look into adding recording and persisting studios and their discussions. This would involve storing information on a server, including spatial information and any textual or audio media recorded during sessions.

PREVIOUS WORK

Below is a list of technologies that we have already developed which explore creative digital technologies including VR, creative coding, social content creation and artistic rendering:

Float: http://elevr.com/float/
Drawing in VR: http://elevr.com/drawing-in-webvr/
Play/Room: http://elevr.com/playroom/

P5.js: http://www.p5js.org
Ploma: http://github.com/evhan55/ploma
Scratch: http://scratch.mit.edu

OPEN QUESTIONS

There are many questions that we hope to explore through building and using Stack Space regarding our assumptions of the value of a shared, virtual art studio. Some of the questions can be categorized into the following themes: fidelity, synchronicity, continuity and privacy.

Fidelity

- Does the embodiment offered by Stack Space feel immersive enough to be transformative?
- How important is the visual accuracy of the captured models? Of the avatars? Of the environment and studio setting?
- How important is the physical simulation of the objects and their interaction?

Synchronicity

- Does the synchronous chat capability support constructive and seamless real-time conversation?
- Is synchronous use of the system always necessary? Is it also useful to use Stack Space asynchronously but still collaboratively?

Continuity

- When is the work in the Stack Space completed?
- What does it mean to archive the work and conversations?

Privacy

- Should the space be open to anyone, or is it meant to be more private, for curated conversations and collaborations?
- Should the Stack Space experience grow to involve more formal "gallery" spaces or playlists for publicly displaying curated content?

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