

GEODE

Abstract

A glowing formation stands in the landscape, inviting viewers to reach out from the distance. Geode is a video mapped sculpture that results from our analysis of improvisational geometry in three dimensional space. The project departs from a neo-concrete inspiration, asking ourselves about the aesthetic potential of emotive geometry, utilizing non-orthogonal shapes and mathematical models based on points and infinite planes. However, Geode takes neo-concrete art to a new dimension by integrating digital geometry in response to audio synthesis. In this way, we accomplish a crystal-like organic shape that glows like the Geodes. The surface variations are the result of real-time sound synthesis. We visualize soundscapes by transforming analog signals into digital data in real-time. The sculpture's metamorphoses is experienced visually by sound-driven generative geometries. The 12-foot-tall structure becomes a scene in a series of public audiovisual performances. The sound is generated through modular audio synthesis (CV/ Gate). The sound data affects the intensity of the experience through a Bluetooth interface and visualized through networked video projections. GEODE is a collaborative effort to fuse public sculpture, soundscape, and visual projection into one immersive experience.

Technical Description

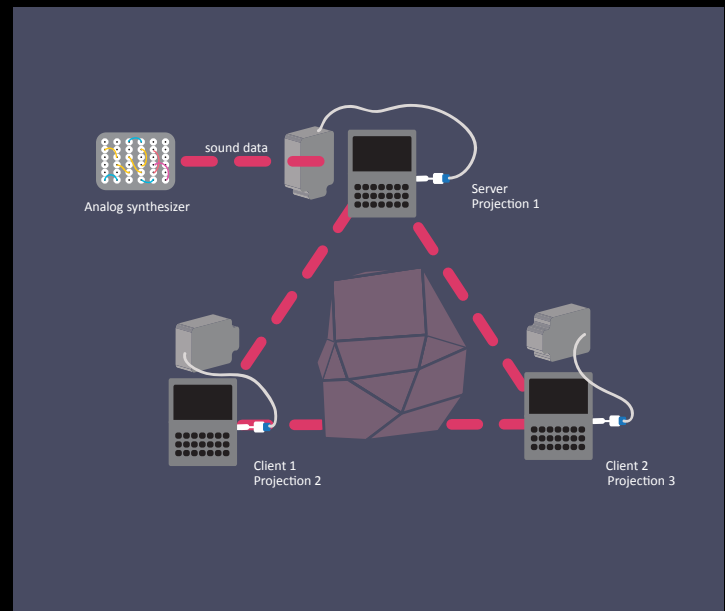
For this project, we designed and novel audiovisual system for live video mapping experiences. The program, coded in the Processing language, utilizes a wireless network to communicate data across multiple video projections. This distributed approach to video mapping minimized computational latency and proved to be easily scalable and adaptable to different contexts.

Our tool of a server/client system for video mapping proved to be easily implemented, ideal for generative art and movie playback of textured planes.

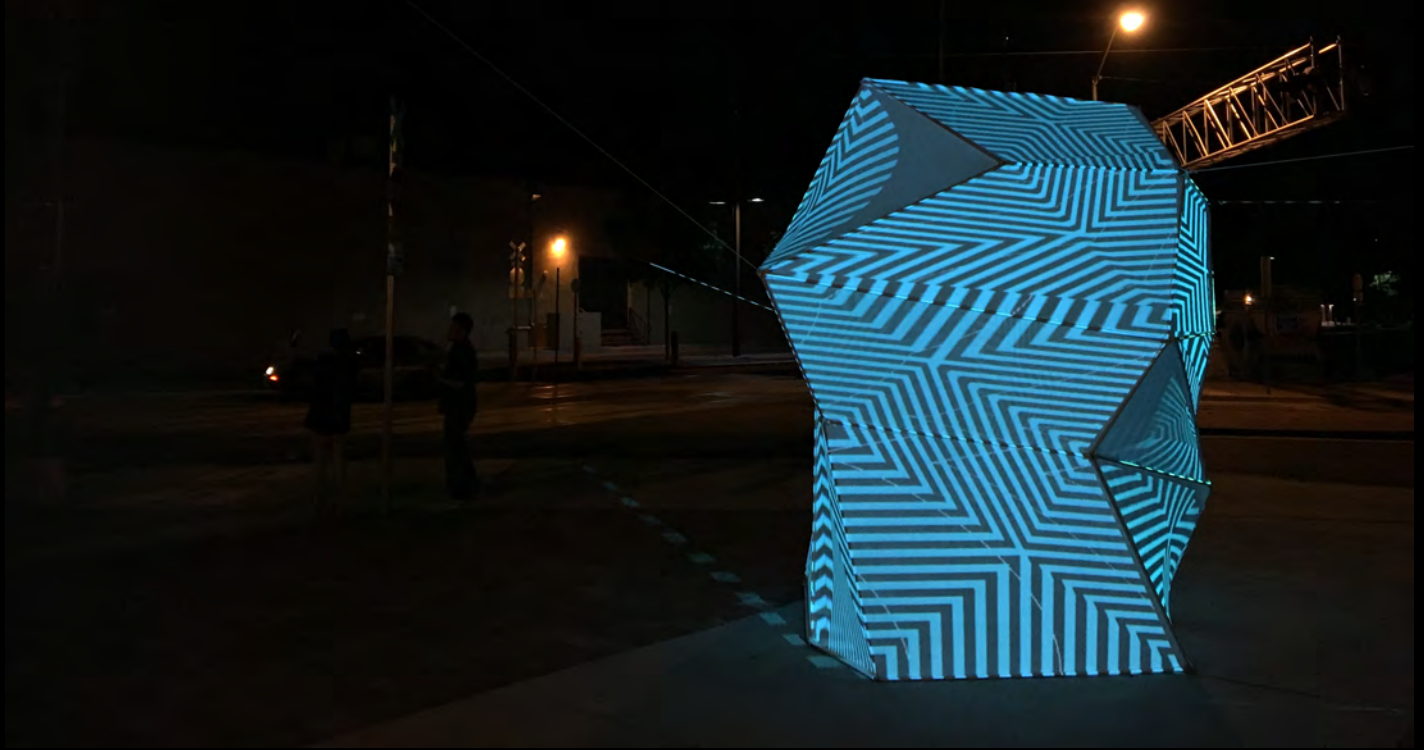
In our first approach, we attempted to send complete raster images through a Java network. This solution was be slow in delivering 512 x 512 pixel images, with a latency of 15 to 30 seconds. In addition, the network was unstable, dropping the connection every minute. As a result, we realized that it didn't make sense to send pixel data through a network, and instead, we propagated the sound data directly to each client and reconstructed the textures on each machine separately. Each machine has previously stored the geometry of the mapped sculpture, and adds the regenerated texture with the data received. We Visualize audio signals through an arduino based-interface transforming current voltage values into digital data. This same voltage modulation is what generates the sound synthesis. This sound data is propagated to each projection.



Geode installed outdoors in Santa Fe, NM



Geode system



Audience Reception

As in with neo-concrete aesthetics, participation is a crucial part of the art piece. In the two occasions that this piece has been installed (Tippecanoe County, Currents new media festival 2016), the Geode event has created a place on its own. From these experiences, we recognized the following elements of public interaction:

The public often times sees the object from the distance, finding it attractive for its glowing qualities. The synaesthetic effect that occurs while synchronizing sound it to a large object, lures the participants into a multimedia experience. There have been noticeable reactions to this piece. We observed a “placemaking” effect, creating a temporary community of bystanders who dwell for the audiovisual performance, that lasts between 45 and 90 minutes. Some people enter in a dialog with the piece using their body as a catalyst of their emotions. This includes dancing, jumping and circling around it. Others find a comfortable spot in which they can stay for the whole audiovisual performance. Some of these reactions can be appreciated on the sample video. The age group of participants ranged from 7 to 75 years old approximately. The observed response of the public was euphoric, and described it also as “beautiful” or “peaceful.” This effect was unintended, but it was certainly a pleasant reaction to us, as we do want to create aesthetic experiences that communicate to a larger community. The simplicity of “beauty” is overlooked when intellectualized, but unconsciously our brain seems more prone to feel the pleasant experience of beauty. These concepts of perceptual beauty and emotion inspire our artistic creation.

Installation description and requirements

Geode's is a 10" x 12" x 10" structure that is built on site from pre-made parts. For this, the artists will arrive to construct the conduit structure at an open space that permits to be seen from the distance. The video illustrates the audiovisual aesthetic of the piece installed in Santa Fe as a demonstration. The sculpture was constructed with lightweight metal conduit and it is covered with rayon fabric. The installation time is approximately 12 hours splitted in two days. The structure was built on site. The resquired equipement includes:

- 3 Video projectors and stands (Provided by artists)
- Computers (Provided by artists)
- CV/ Gate Module (Provided by artists)
- Power supply and extension cords
- Sound amplification and speakers

Explain where there is flexibility in case IEEE VISAP cannot meet every requirement

Although Geode has been exhibited outdoors, we see a lot of potential also on displaying an indoor installation, and projecting on multiple mini-geodes simultaneously. This might be easier to maintain and install. One important thing to consider is that outdoor video mapping requires more time and resources to maintain on a daily basis.