Mediating Public Space: Art and Technology That Goes Beyond the Frame Art Gallery

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Algotecton

Daniel Cardoso Llach, Jingyang (Leo) Liu and Yi-Chin Lee

Algotecton (from *algorithm* and *tecton*—carpentry, articulation) is a site-specific generative sculpture inspired by the Weaire-Phelan structure, a mathematical construct that approximates the geometry of foam. It comprises 16 interlocking polyhedra fabricated using advanced parametric modeling and computer numerical control (CNC) technologies. Evocative of different natural formations—a crystalline structure, a kelp forest, a molecular compound—the sculpture responds to Kendall Buster's *Parabiosis II* piece at the street level of the Washington Convention Center in Washington, D.C. *Algotecton* harnesses state-of-the-art computational design and fabrication techniques to give material expression to mathematical concepts, invite discovery and playfully transform people's perception of space and form.

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Algotecton extends a tradition of mathematical and design research with roots in early studies in morphology, crystallography and molecular modeling. In D'Arcy Wentworth Thompson's pioneering exploration of form in the natural world, for example, morphology is understood as the expression of dynamic processes involving multiple intertwined biophysical forces that can be represented mathematically. The modeling of such structures has been the subject of mathematical and geometric investigations for centuries, playing a role in scientific understandings of the world at the atomic,

***Algotecton*, prefabricated CNC-cut wood laminates, 2019. Renderings show the proposed installation at the Washington Convention Center, in conversation with Kendall Buster's *Parabiosis II*. (© Computational Design Laboratory, Carnegie Mellon University, Daniel Cardoso Llach, Jingyang (Leo) Liu and Yi-Chin Lee)**

molecular and architectural levels. With this broader context as a background, we draw inspiration from the Weaire-Phelan structure, a mathematical construct that approximates the geometry of foam bubbles discovered by Denis Weaire and Robert Phelan, two physicists working at Trinity College, Dublin, in 1993. Using computer simulations, Weaire and Phelan discovered that by minimizing the surface between the different polyhedra, this structure could fill space more efficiently than previously thought possible, thus modeling a more ideal "foam." The structure comprises two kinds of cells of equal volume: an irregular pentagonal dodecahedron and a tetrakaidekahedron, along with two hexagons and 12 pentagons.

Weaire-Phelan is just the starting point of an investigation into computational aesthetics and tectonics. *Algotecton* is based on a system of parametrically defined modular, interlocking and flexible components that is capable of creating solid structures without the need for any fasteners, nails or glue, and is sustained exclusively through friction. This extends our previous studies of modular mono-material mechanical assemblies, and speaks to a tradition of architectural and artistic investigations into 3D lattices and space structures. At a technical level, *Algotecton* explores the potential of state-of-the-art computational design and fabrication technologies, and mechanical assemblies, to enable new kinds of structural efficiency, sustainable production and onsite assembly and disassembly. At an aesthetic level it gives abstract mathematical structures a tangible and site-specific expression.

The interlocking polyhedra of *Algotecton* were designed to be prefabricated at the Computational Design Laboratory at Carnegie Mellon University, Pittsburgh, flat-packed, and assembled on site by the artists with hand tools. However, as a result of the 2020 pandemic and the virtualization of the SIGGRAPH Art Gallery, the piece will be presented interactively online.

Cacophonic Choir

Hannah E. Wolfe, Şölen Kıratlı and Alex Bundy

Cacophonic Choir is an interactive sound installation aimed at bringing attention to the firsthand stories of sexual assault survivors and the way such stories may be distorted by the media and in online discourse. The work is composed of nine vocalizing physical agents distributed in space. Each agent tells a story. Altogether, from a distance, the viewer hears an unintelligible choir—the stories are fragmented and the voices distorted. As the viewer approaches an agent, the story becomes sonically and semantically more coherent. When in the agent's personal space, the viewer can hear the firsthand account [1] of a sexual assault survivor. The work employs several digital media techniques, including machine learning, physical computing, digital audio signal processing, and digital design and fabrication. Agents are fitted with ultrasonic sensors and respond to a viewer approaching it in three ways simultaneously. First, the narrative becomes more coherent, reflecting how stories become distorted by the media. This is achieved by adjusting the accuracy of a generative machine learning algorithm that we designed and trained on the anonymous accounts of more than 500 sexual assault survivors. Second, to express how survivors are silenced, the voices are treated by a granular synthesis algorithm that generates a stuttering and halting effect that decreases as the viewer approaches the agent. Third, the individual form of each agent becomes revealed as the result of it illuminating itself from within, enabling the viewer to see through the soft silicon shell to the digitally fabricated organic form inside. Via these interactions, the work embodies the stories of sexual assault survivors and how these stories are obscured and distorted in online public discourse.

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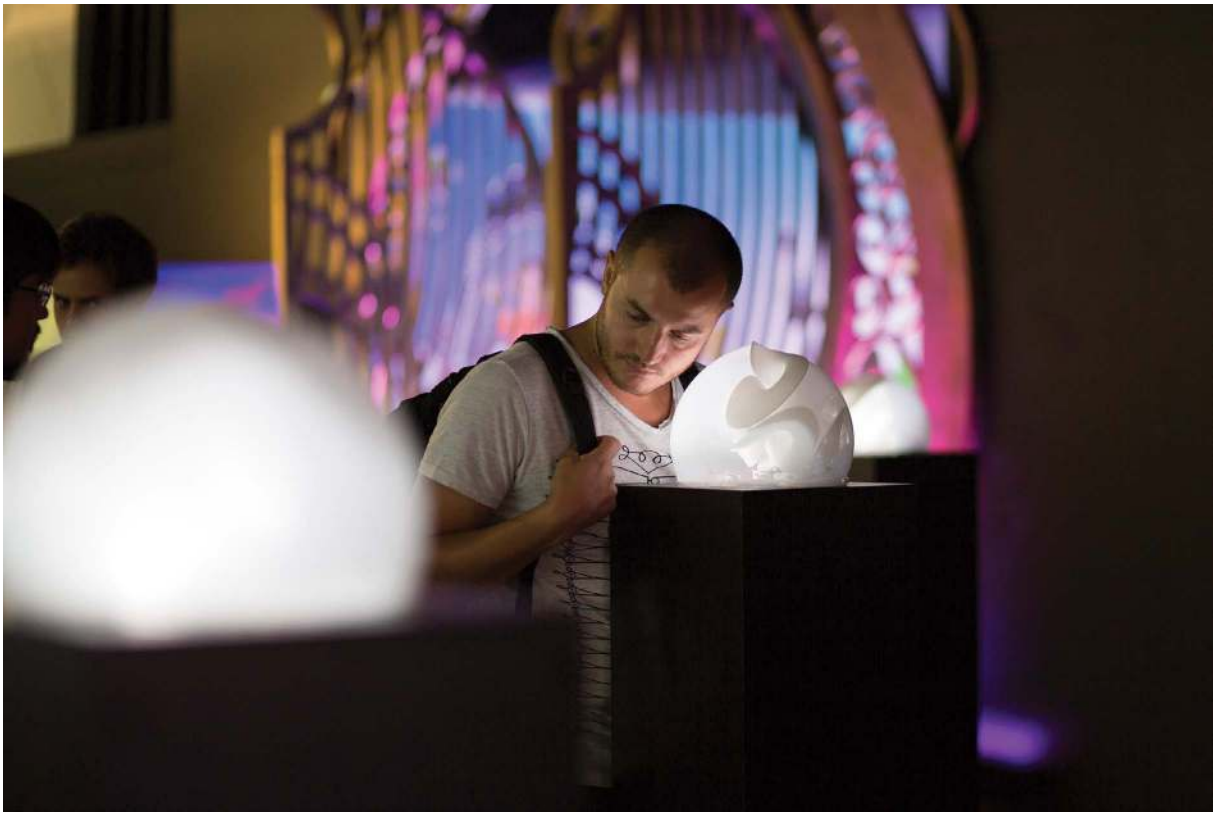
References and Notes

1. These stories were shared on "The When You're Ready Project," a Web-based platform where survivors of sexual violence can have their voices heard. www.whenyoureready.org



***Cacophonic Choir*, interactive sound installation, 2019. (© Hannah Wolfe, Şölen Kıratlı and Alex Bundy. Photo © Gökhan Tugay Şeker.)**

Captured by an Algorithm

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Captured by an Algorithm is a commemorative plate series that looks at romance novels through the lens of Amazon Kindle Popular Highlights. A passage in a Kindle e-book becomes a Popular Highlight after a certain number of people independently highlight the same passage. Popular Highlights are displayed as underlined along with the number of times each has been highlighted by a reader. The highlights in romances are not the racy, salacious quotes one might expect. Instead, they reveal the readers' intense feelings of loneliness, grief, and discontent. With all the social technologies available today, it is astonishing to see that so many people feel so lonely.

Popular Highlights change based on readers' interactions with the books and Amazon's adjustments to the algorithm. In *Captured by an Algorithm*, poignant examples of shared vulnerability are preserved on porcelain commemorative plates. Photoshop's Photomerge algorithm, intended to stitch together photos into panoramas, is instead applied to scans of romance novel covers. Because the covers are so similar, the algorithm finds areas that it believes should overlap, producing dreamy, hybrid landscapes. Each plate features one of these landscapes as well as a Popular Highlight quote from a romance novel.

The nature of these highlights suggests they are not serving as bookmarks for readers to return to later. They are not the type of quotes people share on Goodreads to look smart or well read. When a reader highlights one of these Popular Highlights, it is as if they are saying "I understand" or "Me too!" They can take comfort in knowing that they are one of many feeling the same way. Over 70,000 individual acts of highlighting were used to determine the content for this work. This project draws attention to an existing example of collective social support to change society's vision for the future of social technologies.

The history of commemorative plates in the United States has parallels with the recent tech and housing booms and the subsequent Great Recession. Collecting plates was extremely popular in the 1970s and 1980s in the United States. A 1972 *New York Times* article titled "Decorative Plates—Not Fine Art, but They're Good as Gold" featured people who amassed large collections of plates as a long-term investment [1]. The plate bubble burst in the 1980s, and today these collectibles are worth a fraction of their original price.

The *Times* article also discusses the emotions involved in collecting these plates, many of which feature sentimental imagery of America's past. It ends with a merchant saying, "What collecting does for people is to involve them in the process, give them a connection to life. There are a lot of lonely people in this country and collecting is one way out of their problems." This wistfulness for an idealized past can also be seen in romance novels, which often are not just about romantic love but also feature idyllic small towns, close-knit communities and warm neighbors. The readers' loneliness is readily discernible in the Kindle Popular Highlights, and the plates capture singular moments in the evolution of these ever-changing algorithms.

References and Notes

1. Rita Reif, "Decorative Plates—Not Fine Art, but They're Good as Gold," *New York Times*, 10 May 1972. Available at www.nytimes.com/1972/05/10/archives/decorative-plates-not-fine-art-but-theyre-good-as-gold.html.

***Captured by an Algorithm*, one of 16 ceramic plates, porcelain, 28 cm circumference, 2020. (© Sophia Brueckner)**

Disruptive Devices

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Disruptive Devices is a triptych of digital kinetic artworks that mediate viewer interactions with virtual wildlife. Our current economic system is set up to treat nature as an infinite resource, disturbing ecosystems in unsustainable ways, often using technology as a tool to amplify these disturbances. This piece invites viewers to contemplate this relationship through a surreal lens. Each of the three machines combines a physical hand mechanism controlled by the viewer via a crank wheel that interacts with a virtual natural environment.

***Disruptive Devices*, digital kinetic artworks, 122 × 366 × 31 cm, 2019. (© and Photo: Neil Mendoza)**

Dog of Zone

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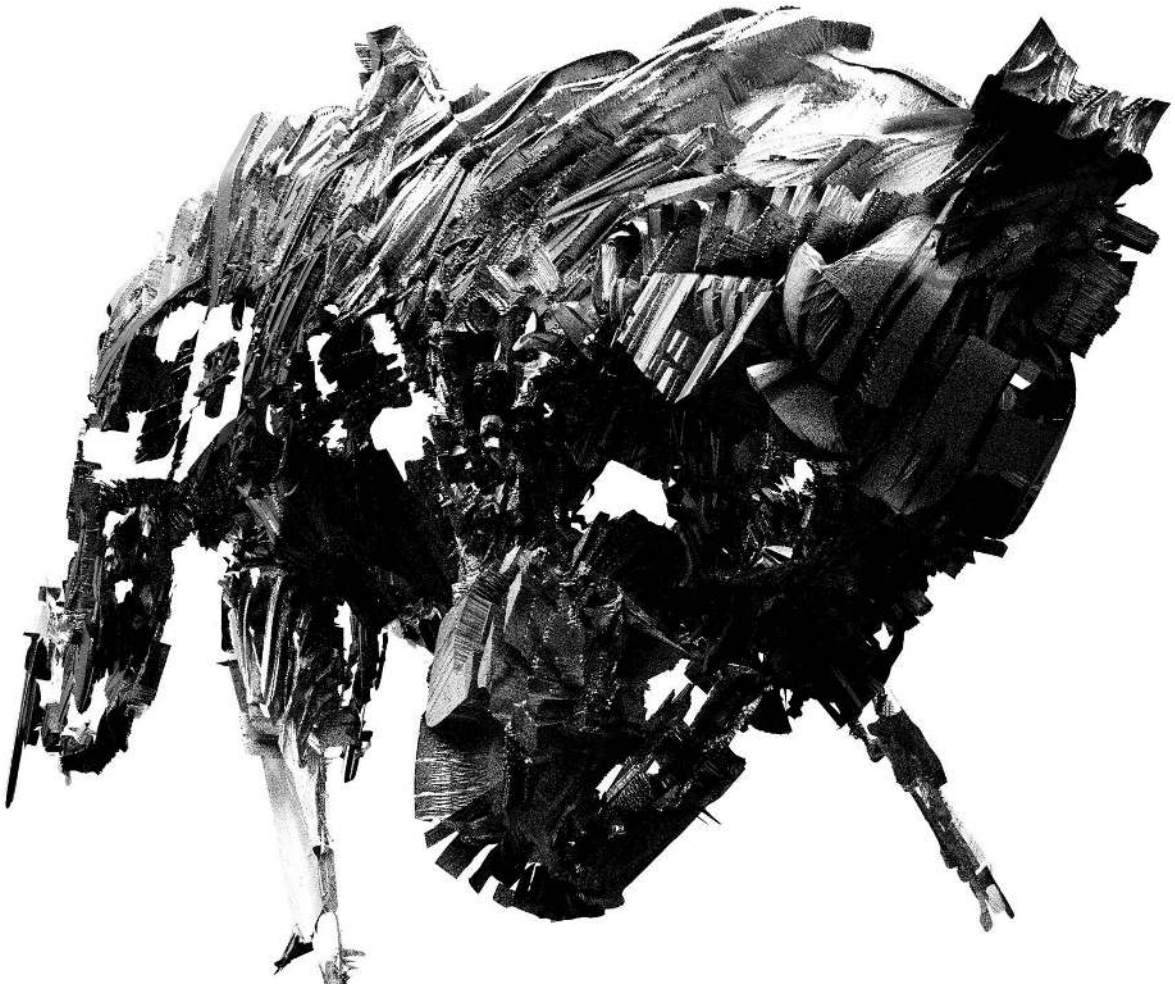
The Zone. Seemingly dead space. It becomes a dominating, uncontrolled, autonomous entity in the presence of a human being. It manifests its reactions by changing the state of objects that belong to it. The Dog is one such object. It's an expression of an abrupt, aggressive motion and destructive influence of the Zone. The concept of the Zone is inspired by Arkady and Boris Strugatsky's novel *Roadside Picnic*, published in 1972, but can also be tied to the movie *Stalker*, directed by Andrei Tarkovsky (1979), and to a nuclear disaster that occurred on 26 April 1986 in Chernobyl in Ukraine.

Dog of Zone merges traditional drawing, 3D computer animation, programming and organic but digitally processed sound. Taking advantage of a wide range of media, Łukasz Pazera searches for means of individual expression within a complex digital environment and unifies his artistic and programming experiences in a single piece of work. Visuals draw from abstract expressionism (especially the art of Franz Kline) and are based on transposing small-scale gestural drawings into the language of 3D computer animation but without losing the drawings' original qualities. The resulting imagery is both expressive and precise.



***Dog of Zone*, interactive installation, 2019. (© Łukasz Pazera)**

The purpose of the work is to create an impression of being in a place such as the Zone. The final effect takes the form of an interactive projection dedicated for a single participant. The participant becomes coauthor of the dramaturgy of events by directing the progression of events through their own physical activity. The projection provides a strong, compressed experience. It is tuned for an instantaneous, iterative perception.

The Zone offers a journey and some kind of reward. It all begins with a white frame. The course of events is divided into three basic stages: First is manifestation—an appearance of a dog figure caused by the initial presence of the participant within the bounds of the Zone. The deconstruction starts with participant movements. Each and every strong-enough activity will cause involuntary, sudden reactions from the dog. These in turn will cause gradual disintegration of its form. This process cannot be stopped, only slowed down. The essence of the dog is contained within the process of its expressive deconstruction. Narration or dramaturgy are only derivatives of the creature's visual transformations. The reactions of the work are dichotomous in their nature. The dog repels, discourages further activity, struggles to maintain its territory and the relative state of equilibrium extending its existence. The Zone, on the other hand, tempts, encourages action causing subsequent stages of the disintegration of its object. Eventually, the figure will deconstruct and transform into a still image that will remain on a screen as long as the participant stays within the bounds of the Zone. This transformation is the third and final act of the projection. In the end the dog is irreversibly erased and the space is asleep again. There is no activity, no objects, no defense or attack—only a white lit wall.

Down Stream [Appalachia]

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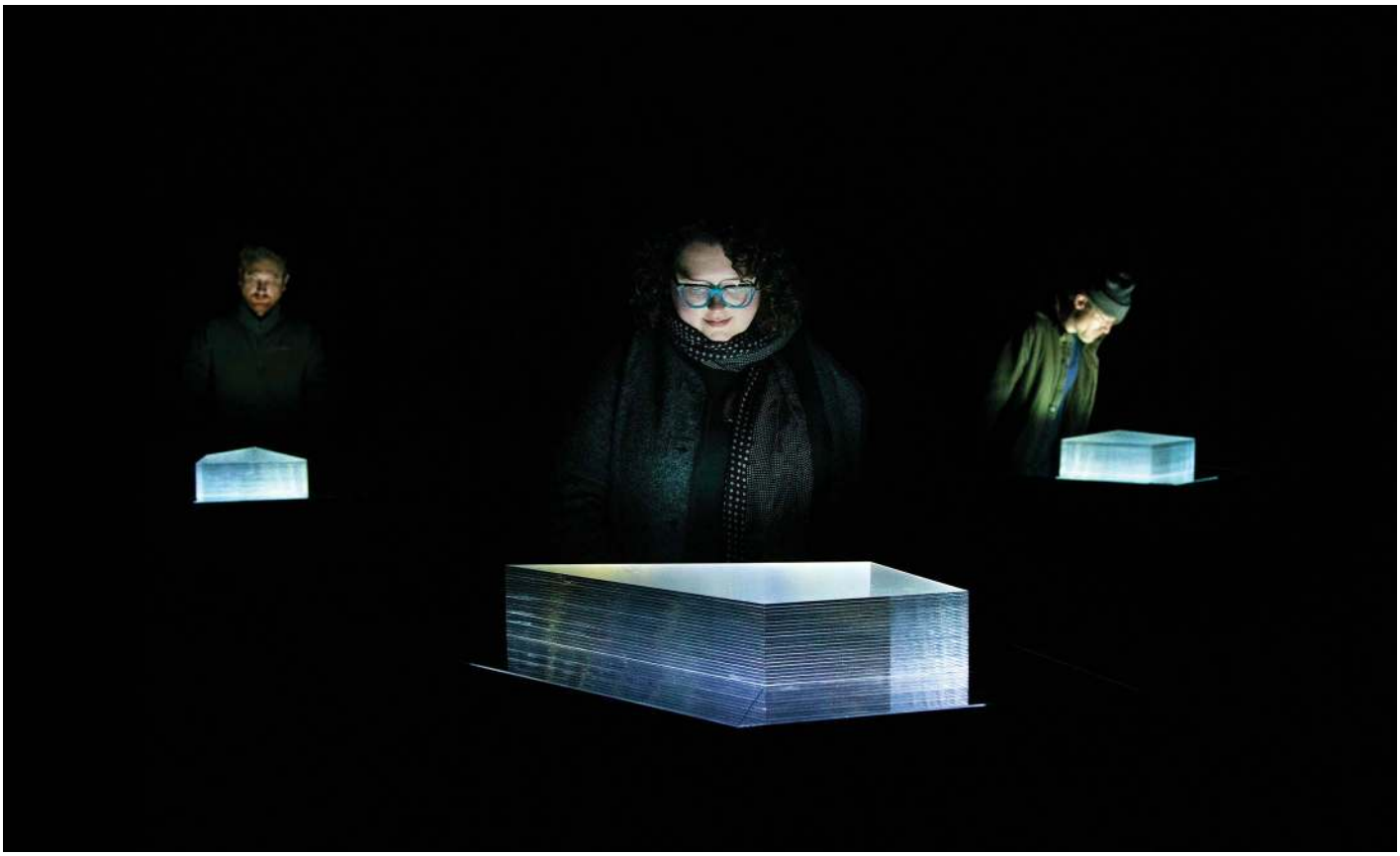
Down Stream [Appalachia] is an immersive, interactive art installation that addresses themes of ecological preservation, conservation and connectedness, illuminating the precarity of imperiled freshwater species in the Appalachian region. The exhibition is composed of three reflective, refractive sculptural forms; each form is made from stacked acrylic and mirrored surfaces projected on from within to create glowing objects that appear to float in the darkness. The installation is surrounded by spatialized sound consisting of music and field recorded audio. Each object contains video footage of a different imperiled animal native to southwest Virginia: the candy darter (*Etheostoma osburni*); the Cumberlandian combshell (*Epioblasma brevidens*) and other freshwater mussels; and the Eastern hellbender salamander (*Cryptobranchus alleganiensis alleganiensis*).

Upon entering the installation, the viewer is plunged into near darkness and submerged in swirling sound, with only the glow from the three forms to guide them, acting as beacons in the void. A disorienting loss of sense of place requires the viewer to focus on the glimmering forms, begging them to draw closer to the objects and, subsequently, the threatened and endangered animals contained therein. The glowing forms could be likened to pools of water, precious gems or shards of amber preserving these animals for a hypothetical future where they may not exist. As the viewer approaches each object, rippling underwater footage fades away to reveal the animals in their natural habitats, illuminating these rarely seen and imperiled species. Simultaneously, the immersive audio reacts to the presence of the viewer, swelling and unfolding new threads of the composition. The reactions are compounded as more people gather, rising to a nearly smothering blanket of sound.



***Down Stream [Appalachia]*, interactive video installation, 2019. (© David Franusich)**

Glass Entanglement

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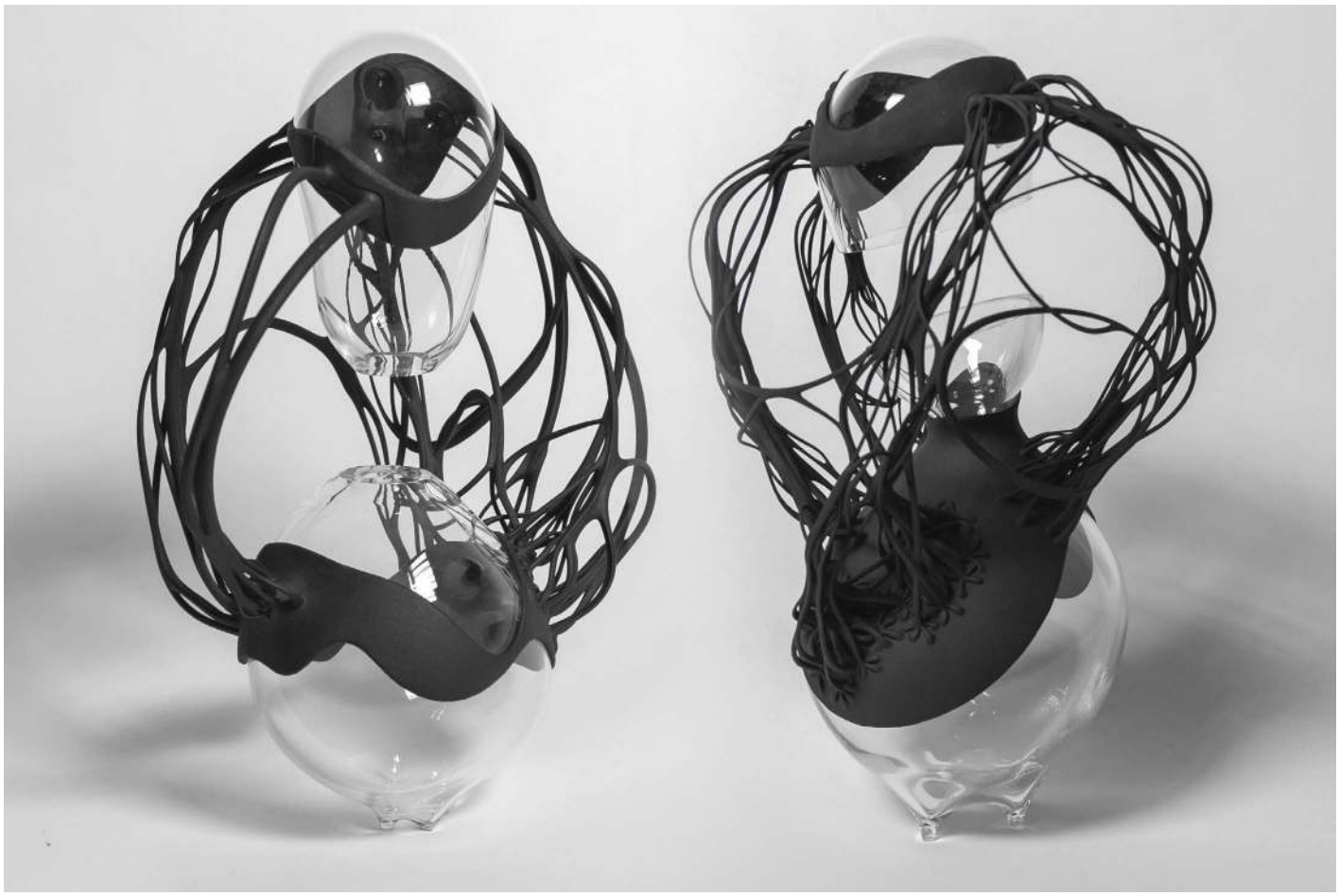
In quantum physics, quantum entanglement is a phenomenon that occurs when a group of particles is generated in such a way that the quantum state of each individual particle cannot be described independently from the other. The work *Glass Entanglement* constructs a similar state in which neither its digital nor analog parts could be read individually and where each part could not be described independently from the other. This work consists of the physical separation of the parts of cellular glass volumes from one another and the 3D-printed form interacting with these single objects to form an ecosystem between the glass volumes. The elements are held together by digitally modeled, tendril-like structures, analogous to the biological cell growth when forming multicellular higher-order organisms.

Glass Entanglement is part of a series of 10 blown glass vessels created during my artist's residency at the Pilchuck Glass School. The shapes of these volumes and their creation loosely follow the notion of primordial mitosis—the splitting of a single cell into two—the beginning of complex forms of life. After their creation at Pilchuck, the blown glass volumes were cut, creating a straight division between the upper and lower parts in the objects. The complete volumes were not 3D scanned before the act of cutting but, once cut, were arranged, held by a series of jigs and then scanned. This created a situation of disruption between the digital and the analog in which the digital augments the actual, not through methods of common overlay such as projection mapping but through digital construction of their gestalt, adding a void in the form. This void is invisible and performative to challenge the relationship between the digital practice and the craft workshop—between techne and poiesis.

The work investigates the possibility of collaborative making from the glass workshop to the digital environment of my practice and introduces the notion of performance into the amalgamation between glass and 3D-printed polymer. The aim of the work *Glass Entanglement* is to create a larger, organism-like construct in which the cut glass vessels can only exist in a 3D scan/3D print—a simultaneous state of digital and actual—simulation and simulacrum taking place at the same time. *Glass Entanglement* is an amalgamate of methods, skills and materials, a hybrid phase matter state, where both sublimation (the scanning of a physical object; the transformation of physical to digital) and reification (the reverse: 3D-printed data solidification) form a new organism. Thus, *Glass Entanglement* is an interplay between glass making, 3D scanning and 3D printing as a choreography in which the scanning of the glass is a performance to construct a form that otherwise would not be possible in either the digital or in the physical space alone. The work extends the emerging discourse on the qualities of digital craftsmanship as a new discipline where material knowledge, digital tooling and traditional skills are amalgamated and intertwined to form a new understanding and dialogue between practices of making and crafting.



***Glass Entanglement I*, Nylon (black), 3D print (Selective Laser Sintering SLS), glass (blown and cut) 2020, 38 × 33 × 19 cm and *Glass Entanglement III*, Nylon (black), 3D print (Selective Laser Sintering SLS), glass (blown and cut) 2020, 38 × 23 × 20 cm. (© Tobias Klein)**

Homeostasis

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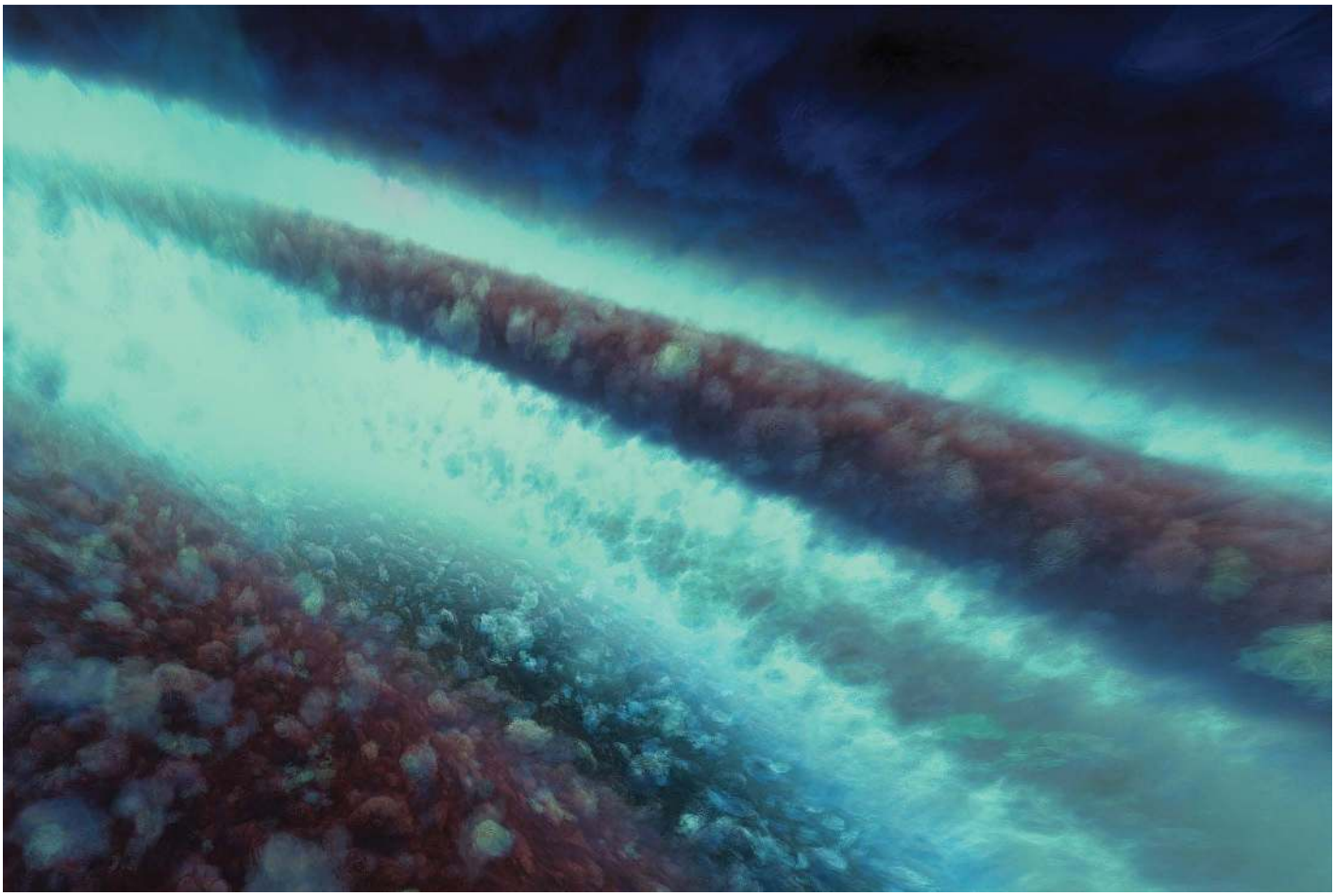
Emerging technologies are impacting human interactions more than ever, while public perception of automation, artificial intelligence (AI) and human enhancement remains critical. In creative fields, innovative ideas are often triggered by intersecting dissimilar phenomena filtered through aesthetic considerations. One can argue that introducing AI in artistic practice destroys spontaneity, intuition and serendipity; consequently, the outcome is deliberate and premeditated. However, art is open to interpretations and through designing of unorthodox digital artifacts, interfaces and experiences in contrast with mainstream processes, we can challenge existing beliefs and provoke new ideas to reach a better understanding of how technology affects our culture. The project *Homeostasis* is a speculative interactive visual experience. It connects a distinctive interface design with generative art and meaningful data to communicate a significant topic. Shapes, colors, form and timing are manipulated based on a set of design principles, while the pattern of a vapor cloud from an ultrasonic vaporizer is analyzed and processed in a machine learning model in real time. The variations of the vapor pattern enable infinite possibilities between the natural boundaries and provide exciting data through computer vision that then drives the spatial and temporal attributes of the animation. The design is biologically inspired, and it attempts to create an illusion of cellular life-forms in deep waters.



***Homeostasis*, interactive, generative art, 2019. Machine learning input and results. (© Emil Polyak)**

Inside Out

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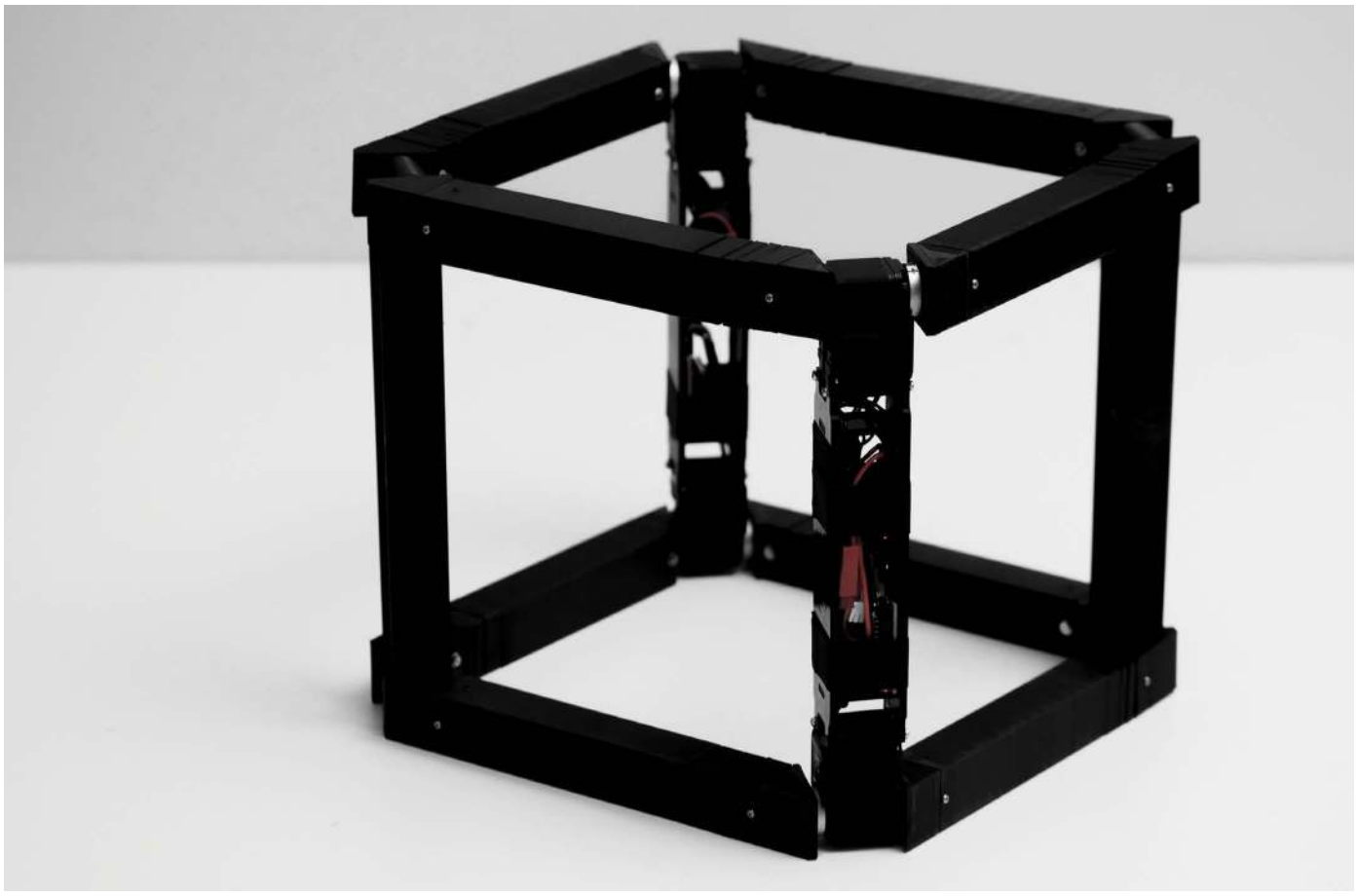
Inside Out is a kinetic installation that expresses the pointlessness of boundaries. We humans draw lines to write letters and sketch pictures. It can be said that drawing lines is an essential part of our culture and art making. However, we also draw lines to divide people by nationality, ethnicity and religion. These lines rely on ephemeral and constantly shifting social contexts. Although such lines are not consistent, the boundaries they create have become the baseline for violence and discrimination.

The world is once again dividing. This unraveling is occurring not only in Asia but also in the Americas, Europe and other continents. Nations have been drawing lines based on unregenerate values, although the Internet has created underground, rhizome-like connections between persons throughout the world. The current pandemic is also accelerating this fragmentation.

Making meaningless boundaries between people hinders mutual understanding and does not solve global problems. Seeing the painful and uncomfortable circumstances caused by this, I decided to create an object that does not differentiate up, down, right, left, inside and outside by lines to embody the pointlessness of human boundary making.

Inside Out is a cube-shaped robot with 12 edges. This artwork autonomously inverts its inside and outside by actuators and telescopic structures.

As this work shows, it is impossible to divide something by lines, even when it is a perfect geometric object devised by humans. I hope this piece will encourage people to erase the boundaries they have drawn in their minds.



***Inside Out*, robotic sculpture, 3D print, 25 × 25 × 25 cm, 2020. (© Yuichiro Katsumoto)**

MYRIOI

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What would it be like to have a shared VR experience and to be present—to really feel presence together—in immersive worlds unimagined, from the atomic to the cosmic?

MYRIOI—"innumerable" ("myriad particles")—is a composition of the quantum world. *MYRIOI* immerses viewers in an interactive composition and quantum simulation of particles, currents and waveforms. Sharing and interacting with this narrative creates a space to understand and to experience the quantum realm viscerally. *MYRIOI*, in its original form, creates a shared experience that allows a group of users to see themselves and each other and to experience the world of the quantum: waveforms, light, the pure essence of form and shape. In light of the current circumstances necessitating social distancing, we have created a version for individual engagement at home that people can experience with a virtual reality headset or on a traditional display.

MYRIOI is designed for the AlloPortal, a custom-constructed general-purpose instrument that is flexible enough to transform any installation space. The AlloPortal is based on our research in designing the AlloSphere facility at the University of California, Santa Barbara. The AlloSphere is unique in its design, as the physical space has no impact on the immersive instrument and the space can be shaped accordingly; the AlloPortal is our configuration system that is sculpted to fit a specific installation space, as any installation outside of the AlloSphere must deal with the physical space it will occupy and the space will affect how the content is experienced.

The AlloPortal to be physically constructed for the SIGGRAPH gallery would deliver a highly immersive stereo visual to a group of users. In order to convince the users that they are "present" in the same world, field of view (FOV) would be expanded to cover peripheral vision, which requires a distributed projection system that spans multiple walls. The distributed system allows the same world to be provided through a head-mounted display (HMD) system for an alternative experience. Users are thus able to explore form and shape from a very intricate and close view, different but derived from the one the group is experiencing. This will serve as the intersection of the flow of dynamic form and dynamically moving virtual sculpture with the fabrication of the prominent theme in material form.

In order to provide an experience close to physically being at the gallery to users at home, we have created a version of *MYRIOI* that can be viewed on personal computers or HMDs, if available. Users will be able to navigate and look around the piece as if they were viewing from a virtual reality instrument, allowing an immersive interaction with the piece. If users have access to an HMD, they would be able to immersively view the piece in its entirety.

We present our studies in composing elementary wavefunctions of a hydrogen-like atom and identify several relationships between physical phenomena and musical composition that helped guide the process. The hydrogen-like atom accurately describes some of the fundamental quantum mechanical phenomena of nature and supplies the composer with a set of well-defined mathematical constraints that can create a wide variety of complex spatiotemporal patterns. We explore the visual appearance of time-dependent combinations of two and three eigenfunctions of an electron with spin in a hydrogen-like atom, highlighting the resulting symmetries and changes. *MYRIOI* takes these wave function combinations to the highest level of counterpoint, myriads or particles forming waves of light interactively and immersively visualized and experienced by a shared community.

***MYRIOI*, multichannel audio VR installation, 2020. Shown: Dr. JoAnn Kuchera-Morin on the bridge of the AlloSphere with material from *MYRIOI*. (© AlloSphere Research Group)**

Ornamental

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In 1948, Claude Shannon's *A Mathematical Theory of Information* laid the groundwork for the digital age. It defined the term *information*, introduced the unit bit and revolutionized how we communicate. Shannon's work gives us physical parameters to define an often perceivably abstract entity: information. It's a seemingly strange and wonderful truth in the digital age that information is physical—where one is often led to believe that information lives in the ether of clouds.

In a reflection on data materialism in the digital age, *Ornamental* creates an emergent system of generative visualizations from live EEG brain data scanned in the gallery. The brain-scanning EEG reader serves as a symbolic data-extracting channel from one's mind, more specifically the extraction of an idea in its most raw and often incomplete form on a noisy information channel. The idea takes the form of binary trees or L-systems that are the fundamental data structure of mapping analog signals to digital encodings. The scanned ideas mutate the binary trees as initial seed data for a thought that is in a constant state of mutation and flux. It is easy to classify an idea as a finalized stagnant thing, but *Ornamental* plays with the possibility of seeing cognitive ideas as temporal physical living entities, transferring form from brain to keystroke to pixel to paper to iris to brain, from host to host to host.

This work was produced during an artist residency with the Victoria & Albert Museum and Goldsmiths, University of London, Department of Computing.

***Ornamental*, EEG headset and video displays, 2019. (© Luke Demarest)**

The Skin

Sanghwa Hong, Hyunchul Kim, Seonghyeon Kim and Byungjoo Lee

Today, computers interact with humans through their own mechanical skins such as touch pads and touch screens. However, existing computer "skin" was only able to measure very limited information, such as contact location and contact pressure, from external contact. *The Skin* is an interactive artwork with a specially constructed touch surface that can measure a total of eight characteristics related to the object in contact with high precision, including four new kinetic properties (static friction coefficient, kinetic friction coefficient, Young's modulus and stiffness). The special touch surface consists of six load cells with cross-roller guides attached to the aluminum base that allows computers to perceive the outside world, similar to how human skin does. When an audience member touches their body or any object on the surface of *The Skin*, the computer generates moving images and sounds from those eight measured properties. In this process, the connection between the parameters of the output generated by the computer and the values measured from the touch surface changes in a way that maximizes the duration of interaction with the audience based on Karl Sims's artificial evolution process. This process is similar to a baby born with very sensitive skin gradually forming a solidarity connection with the outside world through repeated contact.

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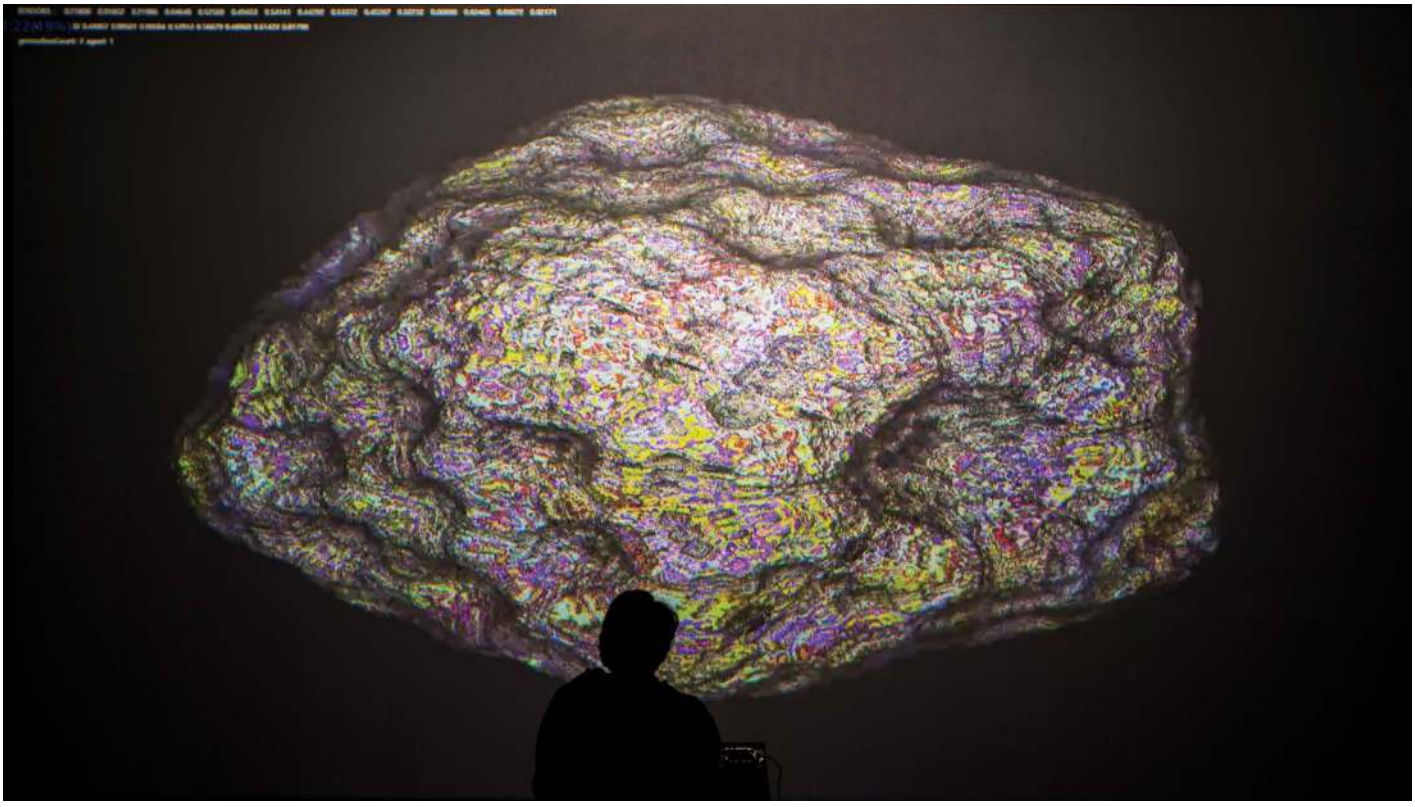

***The Skin*, interactive installation, 2019. (© Sanghwa Hong, Hyunchul Kim, Seonghyeon Kim, Byungjoo Lee. All rights reserved.)**

V[R]ignettes: A Microstory Series

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Originally titled *A Million and Two*, *V[R]ignettes* is a series comprising virtual reality crafted microstories. Each individual microstory, or vignette, is designed to encourage a kind of "narrative smearing"—where traditional story techniques are truncated and mutated into smears (kinetic actions and mechanics, collage-like layered building blocks, visual distortions, dual-tiered text annotations) that require a reader/interactor to make active choices in order to navigate each microstory space (storybox). The microstories presented are part of the ongoing *V[R]ignettes Series*. When exploring each microstory, a reader will experience poetically dense language (such as letters bracketed in words—requiring rereading—that are designed to expand and enhance meaning potentials) and various visual, textual and technological elements that require direct audience input (such as: Do you choose to view each microstory in a 3D or VR space—through a virtual reality headset or a mobile phone or computer monitor? Do you set each microstory to autopilot or navigate the experience through manual annotation click-throughs and spatial manipulations? Do you choose to use the model inspector and view the microstories without any post-processing effects, or in wireframe? Do you choose to enable audio? Do you read only the title fields or entire paragraphs?). Such smears are also designed to be combined by the reader to create a story-piecing system that's circular in nature, where a reader/interactor is encouraged to experience each microstory multiple times, in multiple ways. For instance, when experiencing "In the Skin of the Gloam," if a reader chooses to read only the title line of each annotation, they'll experience a minimal poetic (title) text version. If they instead read the rest of the annotation accompanying each title line, the narrative is accented differently. If they choose to manipulate (scale, rotate, zoom) the 3D models in the space (and/or if they engage autoplay or, in the case of "Wracking in the Upper Bubble," read the wall text only), a reader's experience will be markedly different from those choosing to experience each microstory in a VR space (where teleportation is an option and the spatial dimension is crucial). To load each microstory, readers press the white arrow in the middle of each *V[R]ignettes* storybox (and if viewing on a mobile device, they need to make sure to view each storybox in full screen mode). After clicking on the white arrow, to begin reading the text they click on the "Select an annotation" bar at the bottom of each storybox screen. From there, they get to choose how they experience all other narrative smearing possibilities. If they need help with navigation and controls, they can click the "?" located at the bottom right side of each storybox.

***V[R]ignettes: A Microstory Series*, VR animation, 2019. (© Mez Breeze)**