



Luminiferous Funeral

Journeying in Delusional Pavilions

Sarah Vollmer^{1,2}(✉)  and Racelar Ho^{1,2} 

¹ IVAS GROUP, Toronto, Canada
racelar@yorku.ca

² York University, Toronto, ON, Canada
vollmer@yorku.ca
<http://www.ivas.studio/>

Abstract. In response to the growing climate crisis, *Luminiferous Funeral* is an interdisciplinary Virtual Reality game-art work with a physical sensory perception installation. This work explores the invisible erosion of climate change and environmental breakdown by offering audiences an opportunity to dialogue with nature and seeks to focus participants on the inner communication with oneself about the essential nature of life and death. The relationship to nature is harnessed by our open-source framework in which we seek collaborative interactivity from others - encouraging them to journey within their local *nature space* and document their phenomenological relationship with the environment through sound clips, sketches, video, photographs, and other forms of digital media. Through communication with corresponding environmental and climate scientists, and by combining this user-centric data input with known local climate and weather models, the playable game-art is continuously evolving - downloadable game patches periodically transform a player's virtual world. With a Zen inspired ideology, our cloud-based Artificial Intelligence systems employ Natural Language Processing on texts describing Eastern and Western philosophies of nature, power, fear and love, space and environment - crafting responses into poetic expressions, and physical interpretations of, this ongoing accumulation of climate content used to create the downloadable game.

Keywords: Virtual reality · NLP · AI · Game design · Social issues · Climate issues · Interactivity · Collaborative content creation · XR

1 Introduction

1.1 Inspiration

A blended medium formed by immutability and mutability of digits and strings with specific syntax rules, *digital technology* was once placed as the hope

Supported by Graham Wakefield and the Alice Lab, York University.

of a Utopia of neutrality. Since digital technology has been acting as a sort of *new-age cold-war weapon* with tools of propagating political ideologies, the negative impression of **Technological Phobia** in the general public has been growing since the middle of last century. Such an implicit association with war and politics, its existence seems like a kind of **Original Sin** and accompanies biased impressions. The popularity and the growth of Internet technologies further amplifies the level of panic of this phobia. People are afraid that the possibility of being monitored and threatened by prerogatives or a 'higher special power' would become a permanent 'normal'. Again, while facing uncertain and abstract objects that are difficult to sense and understand directly, people would arguably rather panic and consider them as a threat and present a propensity of negative affective responses. In particular, the missing **right to discourse** regarding the use and adoption of digital technologies further expands this anxiety - people consider that their life may spiral out of control and without visible and perceivable precursors or traces.

Arguably, the World-Wide-Web (WWW) extends the boundary of physical geography and enriches the global narrative amplified to, and multiplied by, the world, where clusters in the various relationships with different cultures are loud, pervasive, and omnipresent. This connected web flattens the spatial morphometric of the world; it shortens the cost of communication and explodes the complexity of power relations among the many different societies. Under the everyday impact of globalisation, the power relationships on the WWW are striking that capital - political and ideological exchanges from different organisations that run on this virtual world. The one who **holds the right to discourse** of digital technologies is empowered to control the standard of defining society, the world and even people themselves, where the gain of this relevant converted result - tangible and intangible capital, is made uniquely accessible. This is similar to a **Gestalt Shift** in that the closed-loop of input/output strengthens the hegemony of such purposeful ideology or so-called 'common sense'; people are seduced into attempts at self-adjusting and self-acquiring power relations to their surroundings (space, nature, station) without recognising that they have been held captive within the grip of a permeating perceptive altering mind trap [10,21,30,31].

Overall, the so-called **Digital Divide** or the democratic claim of technologies is more about the consideration of **cultural prejudice** and the justice of **space (geography of power)**. Instead of suggesting that the public directs their hatred, anger and phobia toward machines, it might be more suitable to say that they are instead suffering the loss of being deprived the **right to self-distribute** the **space** in their power relations within the society. The proposition of the open-source movement provides unique possibilities to create new spatial relations and allows individuals to re-examine the importance of the multiplicity of space, thus regaining their allocation rights to the **Grand Narrative** of the world. This is one of the original aspirations of our current research program. We wish to demonstrate the multiplicity and simultaneity of space with a perceptible form to the public through a methodology of cross-cutting space occupation and allocation to therefore understand the means in which one can regain this **right to discourse**.

As part of our research-creation program - *Luminiferous Funeral—Journeying in Delusional Pavilions* is a Mixed Reality game project focusing on experimenting with relationships between physical space, virtual (digital) space and imaginative space; it is also a disciplinary game accessible through the WWW with two forms - In-Browser and Virtual Reality, to form a playful means of interacting with *space*.

1.2 Context

Philosophy. Aesthetic experience is the primacy of understanding and theorising the nature of aesthetics and art. Martin Heidegger [15], a well-known philosopher of phenomenology, hermeneutics, and existentialism, deems that aesthetic experience is a dominant manner of interpreting the nature of art. This proposition that over-stresses the subjectiveness of experiencers insofar catalyses a hypothesis regarding the end of art. To ignore the presence of the subjectivity and entity of experiencers (audiences and artists) deliberately in the experiential process of appreciating and creating aesthetic objects herein resembles a way of rescuing art. However, the essential fact of art attests that art is created by and interdependently exists with human beings. So, the significant purpose of contemporary aesthetics is to determine and seek for a shareable, common base that allows the experiencers and the objects (artworks) to coexist in the coordinate systems of nature. In other words, it ties the body and the object together in a gentle way, then pauses human intervention on the renovation and reconstruction to the nature of instruments and the passion of the soul. In brief, the subjectiveness in the process of aesthetic experience presents as corporeality (*Leiblichkeit*) - somatic perception, experiencing art through embodied bodies, the physical self.

The concept of *atmosphere* and *climate* is not obscure to understand, especially for the discourse of East Asian culture and aesthetics. In ancient Chinese aesthetic theory, it is expressed as a fusion of Spirit and Rhythm - vitality, harmonious manner and aliveness. It also frequently occurs in the cultural discourse of Western art to emphasise an aesthetic property that is beyond rational explanation but firmly emotion- and perception- related. Therefore, atmosphere in the discourse of contemporary art is generally used to indicate and describe something vague and diffuse, challenging to express. As to what aesthetic discourse and its relevant theories in Western and Eastern worlds suggest, the concept and the reality of atmosphere is a thing that is distinct from daily life - it is a catalyst of fusing a subject and an object and an intermediary status of expressing and representing this fusion.

Sensory Perception. Let us now assert that one's existence precedes their essence. To illustrate this concept we reference medical studies on patients who have severe brain injuries - those characterised by their current *consciousness*

- persistent vegetative state (PVS)¹. Patients who rest on hospital beds, no matter how they look, no matter who they are, are nearly the same. Most of them cannot avoid a tragic destiny that they pass away slowly; eventually, their families cannot help but must turn off all machines that maintain their life. It is noteworthy that the symptom of PVS is an *unresponsive wakefulness* - it is different from patients who are presenting with a coma. This means that a PVS patient's body is still functional - the problem is that the neurons in their brain have a disturbance of communication with each other. Since human brains are skilful at self-restoration, there is a chance that in patients with a low level of consciousness, awareness can be aroused when a certain nerve gets stimulated.

"Awakening of PVS patients" is an interdisciplinary art project initiated by artists Chao Wu and Weilun Xia in 2014, that combines medicine, science, psychology, the science of religion and sociology, music and art to explore the potentiality of individuals' self-consciousness. This project has awakened more than 300 PVS patients and created over 50 shared documentary libraries. Similarly, we contextualise this excitement of sensory perception by acknowledging that the brain, the connections within, can be activated by direct impression. By presenting a carefully crafted virtual (curated) space, we then activate the largest organ - skin, through participatory tactile and haptic impressions of substantiated environmental information and climate data. Thus, it could be suggested that we hope to *awaken* this *persistent vegetative state* of *climate illiteracy*.

Virtual Reality. Immersion, from the Latin word *immergere* (in(to) + dip/plunge), is a kind of sensory perception phenomenon representing a feeling when one's body exists transgressing the physical dimension. As a particular mental state, experiencers journey between the physical world and the virtual world, where their capacity to measure boundaries of time and space gradually becomes vague. There are two dimensions of the meaning in relation to virtual reality: the emerging Virtual Reality (VR) technology, and the other, led by one's self-consciousness, are the internal, emotional, and panoramic transgressive experiences. Human beings strive to transcend limitations of the representation and expression of word, time and space - transforming and virtualising abstract and concrete information into a novel dimension. VR technology increases this common vision by delivering a more tangible way to amplify the sensory perception while penetrating the boundary between physical and imaginative worlds - bridging one's internal perception with communal experiences.

In Venice Biennale 2019, during the interview about her work *"Endodrome"*, artist and musician Dominique Gonzalez-Foerster commented, "As opposed to thinking of VR as a tool for escape or for constructing an artificial world, it is more exciting for me to envision it as a kind of organic and mental space in which abstraction and consciousness can be questioned" [14]. *"Endodrome"* was

¹ The authors acknowledge the pejorative connotation of describing one as *vegetative*, and although alternative vocabulary has been established, we retain this terminology to connect to the art project *"Awakening of PVS patients"*.

the first VR work by Gonzalez-Foerster as well as the first VR work exhibited in Venice Biennale history. It stages an immersive environment to evoke, stimulate, and amplify spectators' memories, emotional feelings, and imaginations through multiple abstract coloured shapes floating and wandering around the VR environment (digital world). To Gonzalez-Foerster, VR technology is not only a tool and a medium for re-morphing and re-mapping a world but also an intermedia to exchange internal and external conscious experiences; VR explores further immersive possibilities by making present one's body and relating oneself to others (things, living beings, and natural environments).

Where is the very beginning of Virtual Reality on any given technological and anthropological perspective? It is *human beings* themselves. The eager desire to explore and create new spatial panoramic layers is derived from the very initial impulse of imagination and curiosity. From the traditional Panoramic Theatre to Happening Art, Gesamtkunstwerk (Total Art), and Digital Media Art, human beings continuously endeavour to extend and transgress their self-awareness throughout substantial and mental (imaginative) space. In functionalism and conventional biology, human beings negotiate and communicate with the world's stirring stimulation through the nervous system. VR technology and the anthropological and psychological phenomenon of virtual reality both trigger and are mutually triggered by each other, immersing one's subjective consciousness along an excitable journey into a strange new world. As Murray suggests, "Immersion is a metaphorical term derived from the physical experience of being submerged in water... the sensation of being surrounded by a completely other reality, as different as water is from the air, that takes over all of our attention, our whole perceptual apparatus" [22].

Climate Perspective. Regarding the issue of the perceptual atmosphere in aesthetic experience, conventional aesthetic theories are uncertain and argumentative. On one hand, they indicate that it is an experience with exceptionally spiritual perceptions: fascination (high arousal and concentration), synaesthesia (high cognitive participation), and resonance with an aesthetic object. Still, there are no agreed upon explicit interpretations of how such a perceptible and conscious process operates. On the other hand, they likewise admit that specific types of art, such as Ecological Art and Climate Art [3, 9, 17, 18, 20, 28, 29, 32, 39], offer contextualised spaces with multi-dimensional sensorial narratives, allowing people to receive and transmit thoughts intuitively. The interdisciplinary art project "*Awakening of PVS patients*" and the supporting psychological research, relates perception, action and clinical therapies to body-compassion and self-compassion and provides a novel idea of understanding aesthetic experience. In this perspective, experiencers, even those who have a disorder of consciousness, can still recognise the aesthetic atmosphere of artistic works.

Luminiferous Funeral can therefore be thought of and placed within an *art-as-activism* context [1, 2, 5] where educational aspirations for discourses on atmosphere, climate and environment are decidedly enhanced by integrating methods of sensory perception experiences. In this way, we make the climate

crisis *tangible* by integrating the essence of *touch* in a *virtual space* - the perception of seeing with the mind through the body.

2 Concept

Luminiferous Funeral is a long-term and ambitious project that seeks to educate through art-based activism. For this reason, our paper will focus primarily on the game design and collaborative content creation central to the virtual and digital evolution of the game-art work. However, for context, a brief summary of the whole work is provided.

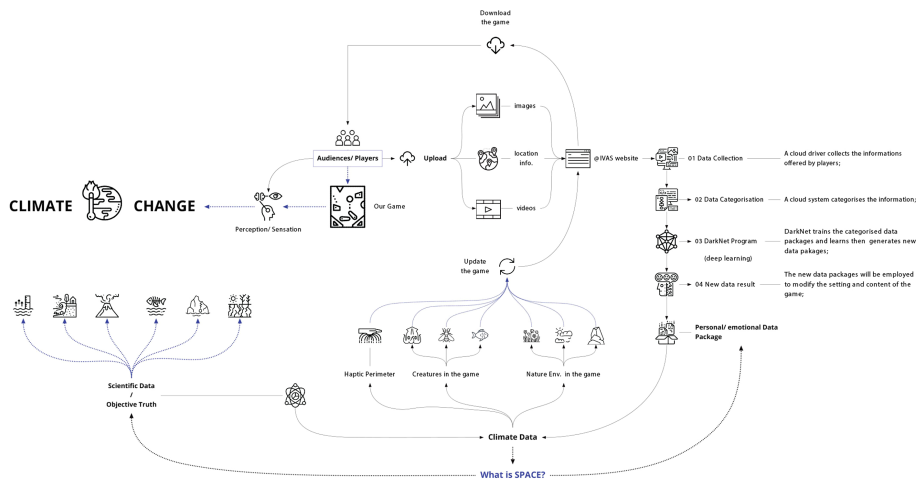


Fig. 1. Concept map of *Luminiferous Funeral*

2.1 Overview of Project Components

In total, this project provides three ways to interact with the digital world we designed: first, audiences can play with the VR (Virtual Reality) game during an installation or through downloading the VR game; second, they can interact with an AR (Augmented Reality) animation app projected on the floor during the installation; third, they can contribute to the evolution of the game content through both a ChatBox app on our website and by submitting digital content (e.g., images, sound clips). The game will also be available In-Browser through a ThreeJS² WebXR³ environment. In keeping with an open-source mindset,

² threejs.org—a JavaScript framework for building online 3D and Mixed Reality content.

³ WebXR is a standardised format for adapting the existing WWW framework to include VR and AR content - together they are known as XR.

all designs and code for our customised haptic devices used for interacting in the VR world will be made available such that anyone may re-create them for personal use. Figure 1 is the concept map establishing the relationships between the different aspects of the project.

Education and Learning Theories. Ultimately, we expect to create an accessible and continuously evolving platform for discussion and education on world issues, and in this context, the *climate crisis*. Through public installations and community workshops we aim to facilitate a discourse on polarizing issues; game-play and aesthetic practices of art-as-activism are the inspirational tools behind our participatory design. With respect to a discourse on climate, local and global positions are explored. By partnering with established climate and environmental scientists the project is supported through a fact-based lens upon which the exploratory and fantastical artwork is developed. Through the evolving conditions of the game content, versions that highlight a local anomaly or concern can be tailored through on-site collection of environmental data - the content of which is fed back into the system for a global perspective, effectively rendering multiple occurrences of the VR world that remain playable as separate versions. Overtime, the differences in human choice on behaviour affecting the environment will be made tangible, and therefore, discussable [24–27]. Here we see a pedagogical framework similar to Carina Girvan and Timothy Savage, who popularized the potential for *Communal Constructivism* and *Knowledge Building* as appropriate pedagogies for virtual worlds. In *Luminiferous Funeral*, “...artefacts created by [one individual] are fed back into subsequent iterations... emphasising the use of past learners and their artefacts to influence the learning experience of future [interactants]... artefacts are thus leveraged to extend their *own* knowledge” (emphasis added) [13].

Education, in general, is a means of transmitting and cultivating accumulated cultures, skills, and habits from one to another through appropriate pedagogies and didacticism, producing a permanent change in one’s behaviour [7]. In its narrow sense, we can consider two ways of educating - personal and popular, direct and indirect, where popular education occurs beyond formal educational institutions, different from schooling practices. It primarily enlightens and affects the self-awareness extension in individuals on the basis of direct and indirect manners through grassroots social activism and movements. Instead of a given and closed system as in school education, public pedagogy of popular education is dynamic, fluid, and open, embedding itself within multiple overlapping and contested sites of learning [23]. Through public pedagogies of art installations, the general public learns social and political insights by participating in the process of *happenings*. As in Elizabeth Ellsworth’s ambitious study in relation to the nature of pedagogy, she suggests converting the concept of knowledge from a *made thing* to a *thing which is in the making* [6]. This derives from a crucial concept of *transitional space* posited by psychologist D. W. Winnicott and describes the progressive transition from an habitual state to that of a novel dimension [40]. To creatively transform established and given knowledge struc-

tures into new practices rather than placing new content on an old scaffold, transitional space transgresses between self, other, given and in-the-creating - arranging real and imagined boundaries into open-ended worlds with multiple novel relations. In other words, this learning format is time affording and immersive, allowing individual learners to morph their long-term knowledge schemas through transgressing this transitional space. Scholars, such as Henry A. Giroux who popularised linking public pedagogy with the study of popular culture in broader education, state that public education *as a practice of neoliberalism* can become a force for progressive social change [11]. It is such global and widespread conditions that favour the self-motivation of individuals to didactically reproduce identities, values, and behaviours. More importantly, Giroux encourages strengthening public education’s power to resist the hegemonic culture of capitalism and asserts the significance to educators, artists, and cultural workers of creating critical and democratic public discourse. This conceptualises public intellectuals as educators to advance democratic transformation [12].

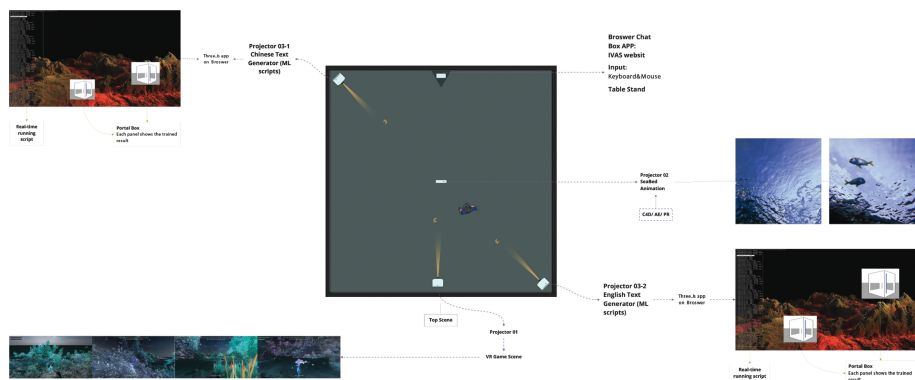


Fig. 2. Exhibition scene - top view of layout and concept plan

Installation. The curation plan mentioned below is structured to let audiences communicate with our project in person (e.g., museum, gallery, public space). We plan to offer an immersive world for audiences to perceive the meaning of *space* under different forms of interactivity. Guests of the exhibit may interact in a variety of ways: actively experiencing the VR world; watching projections of poetic philosophy; uploading content to the cloud AI system; and other participatory actions.

Additionally, by literally cross-cutting the available physical space into separate sections we aim to demonstrate how the meaning of space is generated and to display the difference in understanding of space between Western and East-Asian cultures. These expression will be projected onto the walls as described in Fig. 2. Our audience will not only interact with this curated world through a VR headset but are also encouraged to play with an AR animation projected on the

floor, and to communicate with our ChatBox app through a computer provided in the exhibition area (this conversation can also be accessed through a mobile device connected to our website). Figure 3 displays multiple perspectives of the installation plan and the projected curated content.

3 Design

The overall game mechanics are described by an *ecosystem* of game logic as shown in Fig. 4. The traversable VR game-art world component of the Mixed Reality installation is organised around four themes representing the four seasons on Earth. Absurd Utopic environments are contrasted with metaphorical representations of the severity of our nature crisis - beings such as heteromorphic ghost birds, withered toxic plants, fogs and polluted streams will engulf the minimalist-inspired game space.

Figure 5 and Fig. 6 are current screenshots of the original concept game used as the basis for the VR integration and the ethereal environmental and philosophical space. The real-world interactive landscape component of the installation will incorporate elements such as a series of fog machines, flash equipment and sensors, to provide a hybrid space-time atmosphere and the sensation of twisting dimensions for audiences to experience the emphasised environmental conflict. Gameplay navigation is enhanced by our artistic direction through additional sounds with distinct pitches and tones, such as violet noise (the acoustic thermal sound of water), natural-sound recordings, and through interactive elements. The installation will also pull live data and sonic recordings from the environment in real-time permitting the installation to offer intimate dialogues in any location it is exhibited. In this way, *Luminiferous Funeral—Journeying in Delusional Pavilions* seeks to invoke a sense of urgency in participants to further educate themselves during this critical time.

To be sustained in this alternative world, interactants need to collect and capture secret poems and invisible ghosts that are scattered and hidden throughout our afterlife and can only be sensed through the 360° soundscape and hints transmitted by our customised haptics. The poetic expressions are crafted through Natural Language Processing (NLP) AI techniques trained on Eastern and Western philosophies and understandings of nature, power, fear and love; the ghosts are those of the elements of nature that have become extinct or tragically harmed due to climate change. Figure 7 and Fig. 8 are early concept sketches during development of the methods of sensorial integration and kinaesthetic experimentation.

Pulling from the duality found in fundamental theories of physics, nature and existence we envision a sense of parallel worlds enticing one to hear the call of a collapsed time function - to feel the urgency grounded through a futuristic Dystopic death reaching back in time to touch us here and now. As such, participants are forced to interact with invisible elements (ghosts of nature that we are presently losing or have already lost) that can only be felt (unexpected haptic feedback and sensorial experiences) as one explores their new environmental

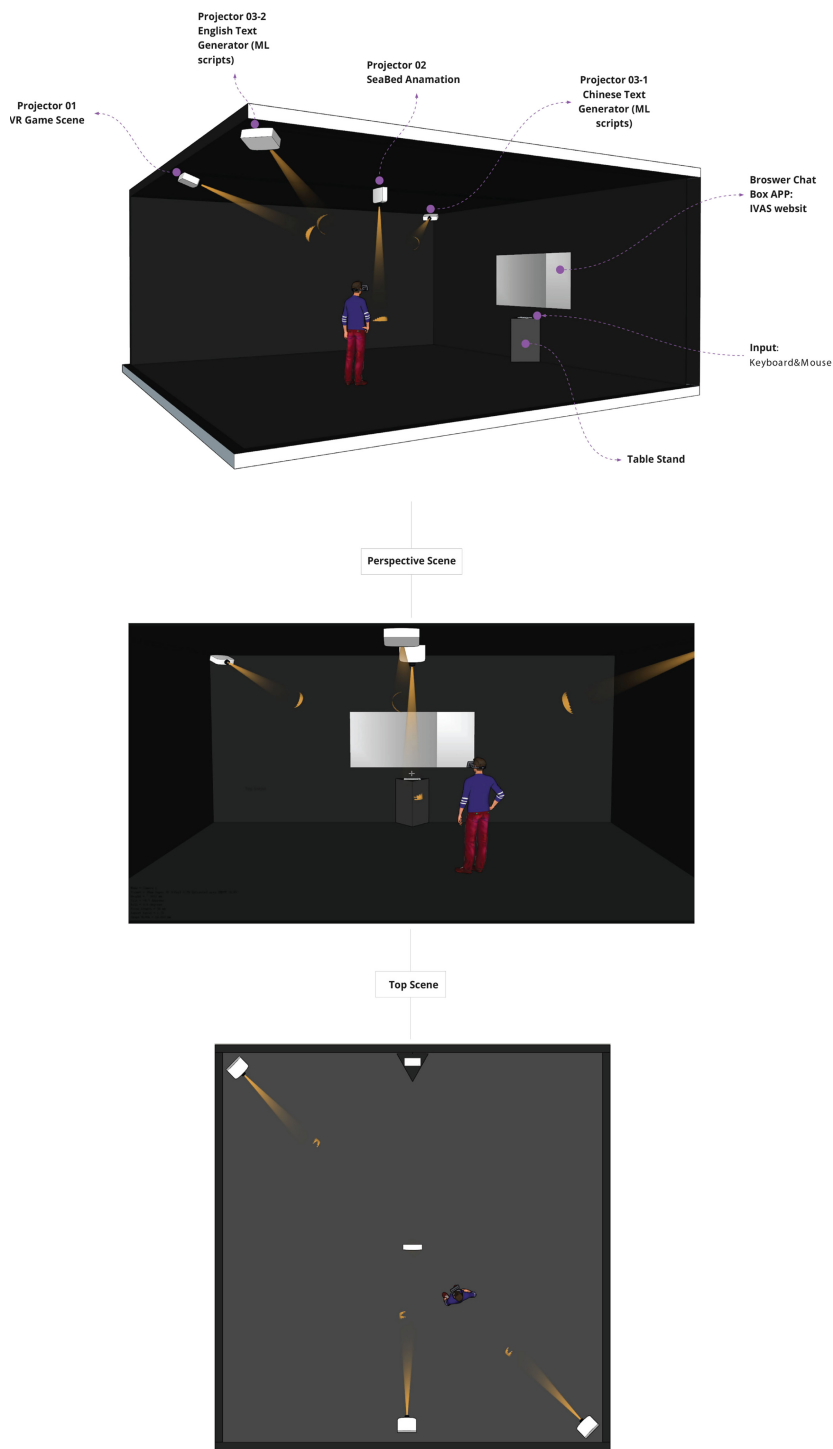


Fig. 3. Exhibition scene - detail perspective view

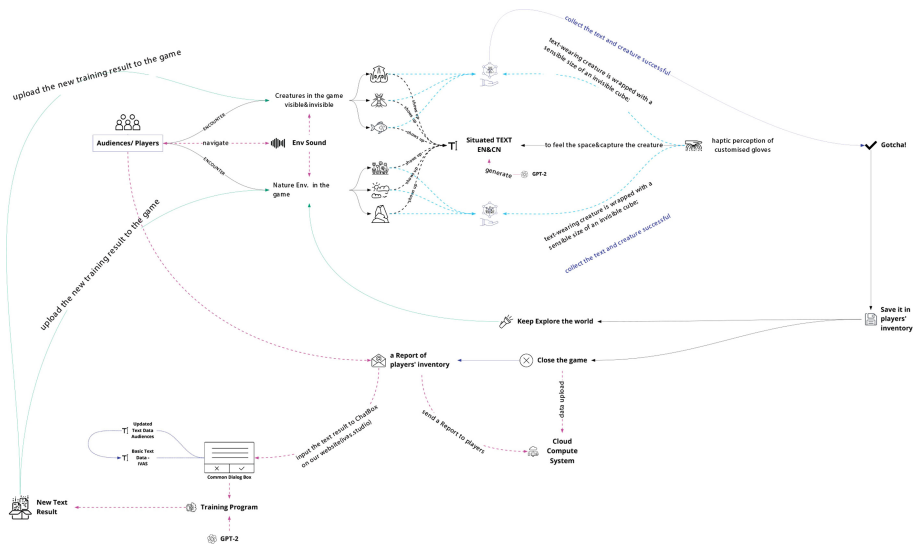


Fig. 4. Game mechanics and logic

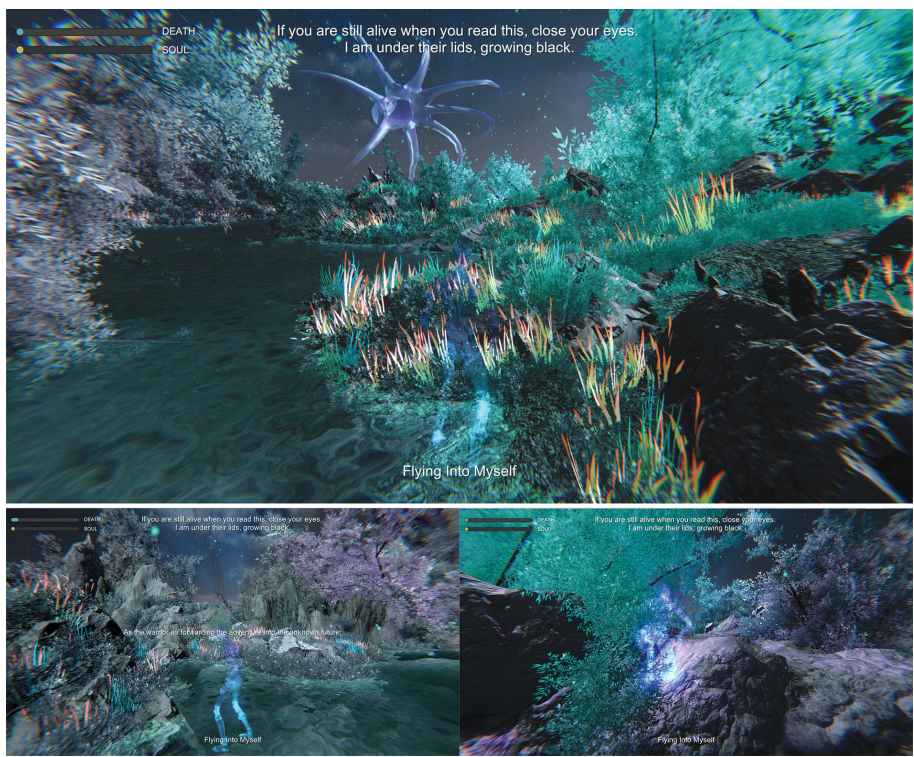


Fig. 5. Screenshot of gameplay

reality. Thus, a crucial game element is the constant and mysterious dynamical flow of physical perception transmitted by our custom-built VR glove-like controllers and on-body haptics that materialise and diffuse the sensation between the real and the virtual. In this way, interactants are immersed in and feel the environmental damage in such a way that the visible scenes are only the beginning for one to evoke self-introspection. The intensity of the haptic feedback of the custom wearables increases with time and context to parallel the unseen injuries accruing from current environmental collapse.

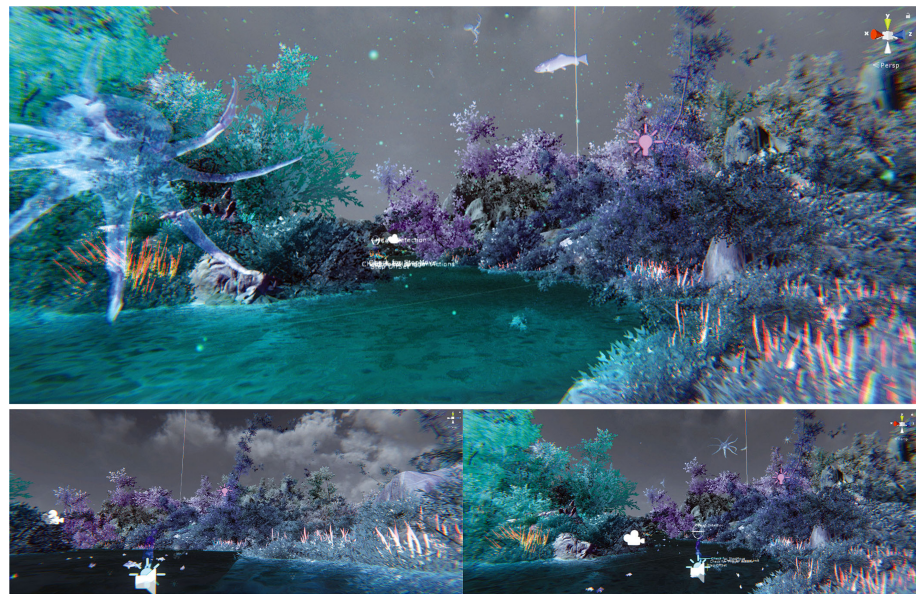


Fig. 6. Screenshot of existing game content

3.1 Content Creation Through Collaborative Construction

A core perspective we took when first establishing the parameters of the project was to explore the possibility of leveraging the benefit of a (formally) educated perspective with the self-appeasing instinct of personal experience. Would it be possible to create an art-work that actively engages one on a personal, yet factual basis? Could a simulated, fantastical virtual world provide a connection to real-world experiences? By combining the contribution of established environmental and climate data sets, verification and filtering provided by field experts and the user-centric individual world-views provided by the uploaded digital content, we weave an evolving ecosystem, explorable through curiosity driven sensorial perception.

Features. To illustrate and experiment with the perception of space - which may or may not be affected by different cultural ideologies, we propose to set up two different NLP data packages in which the content is constructed through *imagined relationships* to space [4, 8, 19, 33–38]. Figure 9 identifies a sample categorisation made by the machine learning algorithm trained to identify common everyday items. However, for our project, we expand beyond categorisation and identification and instead utilise the input content (climate models, weather patterns, provided images and sounds from local environments, and, for example, environmental scientists’ expert input on eliminating ‘garbage’ content) to generate custom and curated content within the VR world itself. Not unlike a regularly occurring game patch (update of content), our game will undergo continuous evolution as it grows in supplied content and arterial ‘understanding’ of ‘itself’.

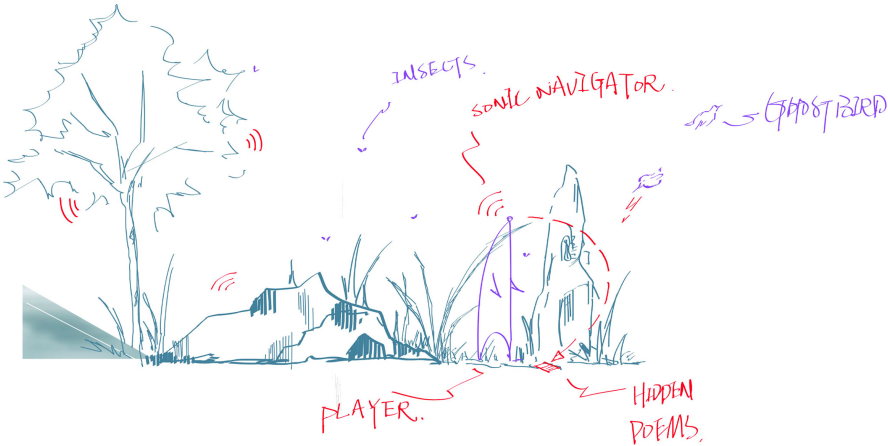


Fig. 7. Concept art of game environment

Figure 10 summarises the AI data input analysis chain. Interaction by audience participants with this program, both through uploading content to our hosting site as well as through the physical kinaesthetic exploration of the populated VR game-art world, would be based on these two pre-trained models. The relationship to language and cultural ideas on nature, environment and power are driven by poetic NLP emergent patterns trained on texts as previously suggested. We chose vital philosophical materials that can be understood to represent features of the two cultures we contrast and compare within this project. The resulting generated poetic structure provided by the algorithms will cause the narrative content to change within the game itself while also impacting the perceptive parameters of the haptic response felt by a participant. Moreover, every updated (AI output) summary data patch would be recorded in our document as our research material and then associated with each successive version

of the VR program, forming a complete ecosystem. These updates will be loaded during game start-up sessions as an additional script used to populate the game world. An example of a training data set is shown in Fig. 11.

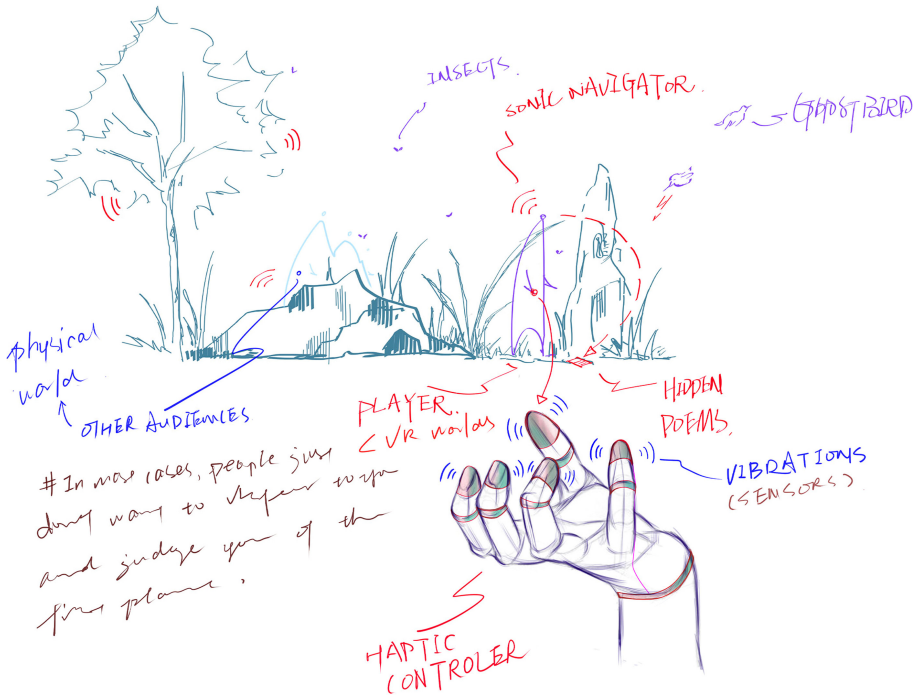


Fig. 8. Concept art of game mechanics

3.2 Interactivity and the Haptic Response

A critical aspect of the curated experience rests on the experienter's capacity to interact with the VR world through the stimulation of a touch-based discourse. Spatial recognition is transmitted as one explores the world through haptic feedback situated over the entire body - with specific attention positioned at the hands. We consider here a Husserlian [16] perspective - one that distinguishes between spatial things that can be interacted with and temporal experiences that can be lived. The former is experienced through incomplete and one-sided profiles that are presented to the interactant; the later is experienced such that *what it is* and *what it is perceived to be* are the same. In either case, both are existing in a state of essence - this is their true nature. Sensory profiles are both presented and received by means of a mediating technology - one sided profiles are crafted explicitly by the isolation and amplification of individual senses yet

the experience of a resulting or reactionary embodied emotional state is (individually) experienced in the same way as it is perceived.

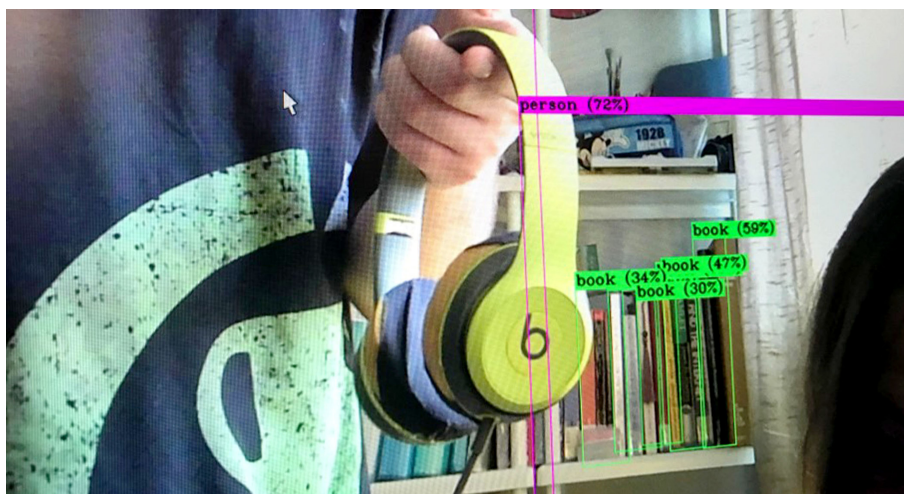


Fig. 9. Sample categorisation of identified objects

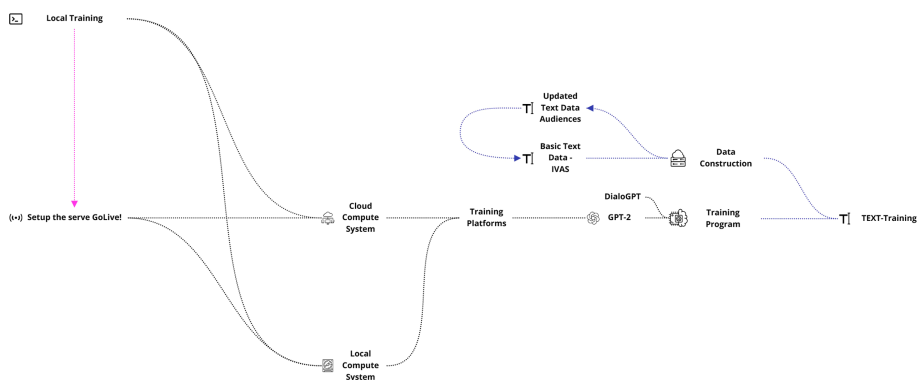


Fig. 10. AI and NLP analysis chain

By forcing a directed and consistent exposure to others via linked technology and content exchange, one is lifted from the confines of their internalised perceptive ideations (Husserl's eidetic intuition) and instead asked to engage in a participatory exchange of a collective presence. Thus, the use of technology that is intentionally designed to pervasively inflict interconnected somatic experiences allows one to exist along, and within, an *action-response continuum* where one

is encouraged to gain, and reinforced to retain, a complex awareness of self, others and environment. It is conceivable that the relationships developed between individuals and a particular mediating technology may intentionally create a space where pre-existing assumptions are challenged through sensory fusions.

```
Generating samples...
===== SAMPLE 1 =====
', and this is the meaning of the 'child' stage at Z1.1 (and see H3.88, AC26). Likewise, this anal-
ysis needs to begin with Zeus and the other gods, and then Plato, and then become essentially appearan-
ces. Thus, at H2.49, N writes of eternal recurrence as 'the appearance of the diseased to balance the
gifts' of the good and wicked (and see Z1.14). See also amor fati.

<|endoftext|>

The dithyramb was in ancient Greek literature a choral hymn to Dionysus, set to music and dance. The
dithyramb, N believes (following Aristotle) was thus the original form of Greek tragedy (see BT5 and
8). Only fragments of dithyrambs survive, along with observations concerning characteristic rhythmic
, formal, and narrative qualities, but without any clear evidence as to how they were performed. N thus
sees himself and Wagner as reinventing the form (Wagner is the 'dithyrambic dramatist' at UM4.7).
N attempts to recreate the dithyramb as a literary form (albeit without music) in Z. In EH, N draws at-
tention to Z2.9 and Z3.4 as his finest examples (see EH7). Near the end of his working life, he pre-
pared for publication a set of poems with the title Dionysus Dithyrambs.

<|endoftext|>

Hund. A dog is a domesticated, and degraded, beast of prey. Thus, it is both suddenly aggressive, and
contemptible in its display of cowardliness (D135), distress (1883.7.42, Z4.19.8) or anger (1885.38.20
, GM3.14, WCPostscript1). Having been a slave, it has become nothing other than a slave (H3. closing d
ialogue). Thus, the dog is an important analogy for internalization, the opinions of or relationships
to others becoming part of one's identity. The dog's famous loyalty is nothing more than submission,
and it is thus no more capable of love, but for a different reason, than the cat (1882.1.30). This su-
bmission is akin to a human's religious feeling (1885.34.141) - obedience out of fear, or long disci-
pline. The dog is something that is supposed to be wretched, so that its owner can feel important or p-
owerful (D369 and see GS312). The sheepdog is an obvious metaphor for those who devote themselves to t
he protection of the herd (ZP9, Z4.7). The fire-dog in Z (a volcano) is noisy, spectacular, but irrelev-
ant (Z2.18, 1883.10.28) - and thus like the socialist revolution and similar events. The truly import-
ant moments are quiet creating of values. In Z4, Zarathustra tells the story of a traveller accidental-
ly stepping on a sleeping dog, making enemies of those who could be friends (Z4.4 - but N worked on t
his passage in many notebook entries); the meaning is similar to the story of the adder at Z1.19.

<|endoftext|>

Trauma. Early in his career, N uses the dream to characterize the Apollonian. The key distinction ther-
e is not between dreaming and being awake; the dream is employed to understand a certain domain of cul-
ture, and particularly of art. The dream is a self-created world, one that is created to be aligned with
our instincts of preservation and our need to justify our existence and our values. The dream is not
simply illusion - we can be aware of ourselves dreaming - but the validity of the beautiful forms
that we dream are derived from their role in our health and our preservation, and not in their truth s-
trictly speaking. This is the account throughout ET and is found again at UM4.4. In H, N tries a gener-
al psychology of the dream, particularly the way dreams make sense of stimuli through a retrospective
ascription of causation. But this is precisely how we live our waking lives also (H1.13). At D119, the
analysis changes focus, to dreams as the space in which our drives act or realize themselves; again,
this is not different to waking life. Such ideas were important for Freud.

<|endoftext|>

Later, N explores the idea that not only is waking life not a great deal different from dreams but tha-
t, to extent that we insist on it being so, this is a sign of weakness or degeneracy. Waking life is t
he domain in which our instincts or drives are despised, but the values expressed, and developed, in m-
y dreams will inevitably find their way into
```

Fig. 11. NLP training data sample text

We therefore consider the integration of custom haptic technology (see Fig. 12) and kinaesthetic experiences that evolve alongside, and are influenced by, the content evolution of the submitted climate data, reflect the suggested importance of *making tangible* these perceivably more abstract and displaced environmental issues. Thus, a series of haptic devices have been, and will con-

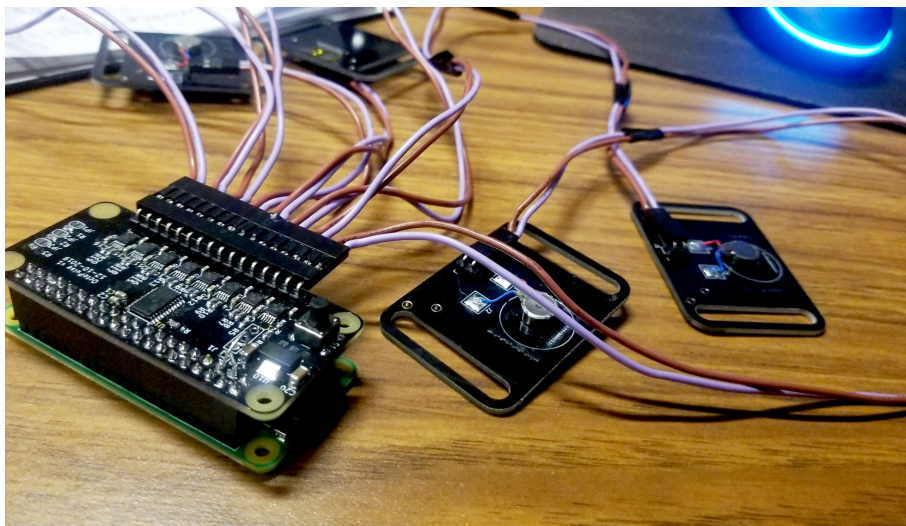


Fig. 12. Custom on-body haptics

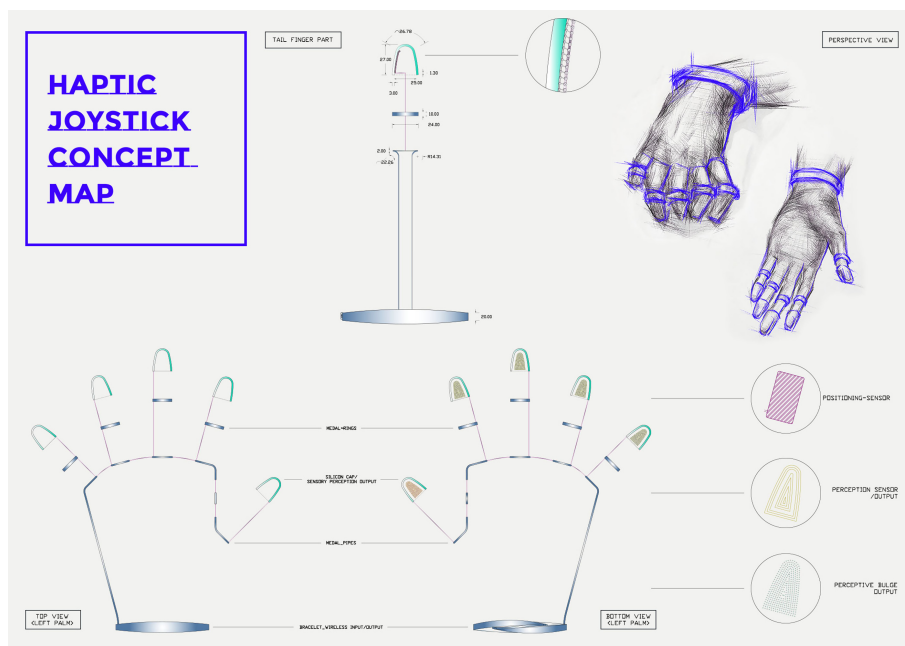


Fig. 13. Design of custom hand haptics

tinue to be, developed to expose multiple body-centric aspects of sensory stimulation. Figure 13 illustrates the concept plan for a set of custom specialty tactile gloves and Fig. 14 is a live shot of testing hand-tracking and haptic integration in VR during the early stages of WebXR development.

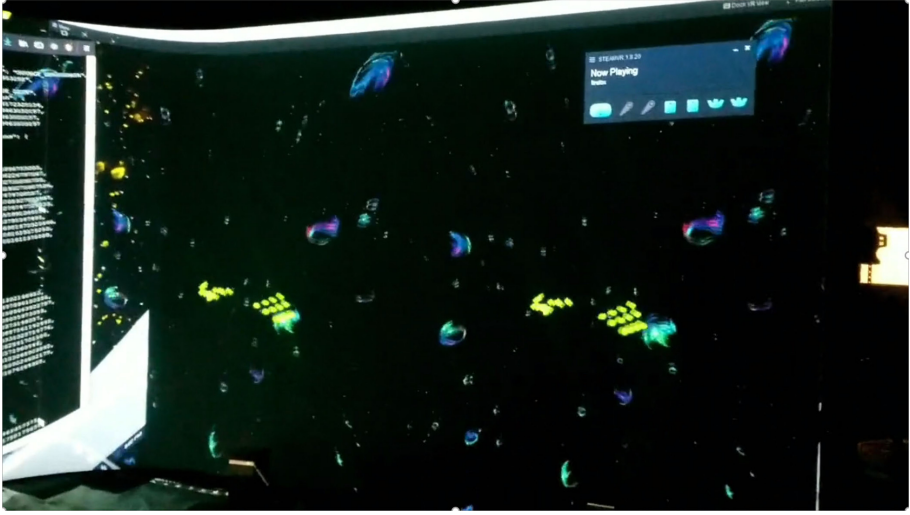


Fig. 14. Demonstration of hand tracking in test VR world

4 Conclusion

Luminiferous Funeral is a game that will evolve to structure itself into a thriving *ecosystem* through the contribution of text, images, videos, sounds and location data by AI, audiences, and artists. Overall, we wish to amplify the perceptions of the multiplicity and simultaneity of space and natural environments for the general public to have a closer look at the world they are living in. Further, we ask those who experience the piece to attune to an *awareness of knowing* to re-attain their *right to discourse* in the *Grand Narrative* of the world and current state of climate change. Moreover, since it is also an open-source project, we wish for the general public to not only make their own set of haptic devices based on our instruction but to also share their creative modifications, allowing others to experience and sense an alternative perspective of perception based on their individual understanding of the world. Finally, since this game-art project is based on the concept of a revolving open-world narrative, we wish for it to be a sort of everyday experience for the general public and provide them with the tools to consciously question their awareness of the world, their space, and the environment.

Acknowledgments. Funding for this project is provided by a VISTA: Vision Science to Application scholarship, a CFREF program, the Centre for Vision Research (CVR) at York University, Canada; a CIBC Student award fund; the Susan Crocker and John Hunkin scholarship in the fine arts; RA funding from Dr. Doug Van Nort (DisPerSion Lab, York University, Canada). Both authors would also love to give many thanks to Dr. Graham Wakefield (Alice Lab, York University, Canada) who has provided both RA funding as well as incredible support as a primary PhD supervisor.

References

1. Anderson, L., Huang, H.C.: *The Chalkroom*. Interactive Art Installtion (2017)
2. Anderson, L., Huang, H.C.: *To The Moon*. Virtual Reality Interactive Art Application (2018)
3. Aula, I., Niskanen, M., Salo, J.M.: *Ghost Light*. Video Documentation of the Installtion (2020)
4. Burnham, D.: *The Nietzsche Dictionary*. Bloomsbury Academic, London (2014)
5. Davies, C.: *Ephémère*. Virtual Reality Interactive Art Application (1998)
6. Ellsworth, E.: *Places of Learning: Media, Architecture, Pedagogy*. Routledge, New York (2004). <https://doi.org/10.4324/9780203020920>
7. Esu, A., Junaid, A.: Educational development: traditional and contemporary. <http://www.onlinenigeria.com/education/>. Accessed 30 Feb 2013
8. Young, E.B.: *The Deleuze and Guattari Dictionary*. Continuum Publishing Corporation, London (2013)
9. Feingold, K.: *Sinking Feeling*. Interactive Art Installation (2001)
10. Fleischmann, M., Strauss, W.: Staging of the thinking space: from immersion to performative presence, pp. 266–281. Transcript-Verlag (2015)
11. Giroux, H.A.: Public pedagogy as cultural politics: stuart hall and the “crisis” of culture. *Cult. Stud.* 14(2), 341–360 (2000). <https://doi.org/10.1080/095023800334913>
12. Giroux, H.A.: Cultural studies, public pedagogy, and the responsibility of intellectuals. *Commun. Crit. Cult. Stud.* 1(1), 59–79 (2004). <https://doi.org/10.1080/1479142042000180926>
13. Girvan, C., Savage, T.: Identifying an appropriate pedagogy for virtual worlds: a communal constructivism case study. *Comput. Educ.* 55(1), 342–349 (2010). <https://doi.org/10.1016/j.compedu.2010.01.020>
14. Gonzalez-Foerster, D.: *Endodrome*, VR environment. Lucid Realities Studio, December 2019. <https://vimeo.com/379260341>
15. Heidegger, M.: Being and time. In: *Philosophy’s Higher Education*, pp. 49–73. Springer, Dordrecht (2005). https://doi.org/10.1007/1-4020-2348-0_3
16. Husserl, E.: *The Phenomenology of Internal Time-Consciousness*. Indiana University Press, Bloomington (1964). <https://doi.org/10.2307/j.ctvh4zhv9>
17. Lozano-Hemmer, R.: *Airborne Projection-Relational Architecture 20*. Interactive Art Installation (2013)
18. Lozano-Hemmer, R.: *Cloud Display*. Interactive Art Installation (2019)
19. Magee, G.: *The Hegel Dictionary*. Bloomsbury Academic, London (2010)
20. McRobert, L.: *Char Davies’ Immersive Virtual Art and the Essence of Spatiality*. University of Toronto Press, Toronto (2007). <https://doi.org/10.3138/9781442684171>
21. Merleau-Ponty, M.: *Penomenology of Perception*. Routledge/CRC Press, London/New York (2017)

22. Murray, J.: *Hamlet on the Holodeck: The Future of Narrative*. MIT Press, Cambridge (2017)
23. O'Malley, M.P., Sandlin, J.A., Burdick, J.: Public pedagogy. In: *Encyclopedia of Curriculum Studies*, pp. 697–700 (2010). <https://doi.org/10.4135/9781412958806.n375>
24. Seaman, B.: *The World Generator/The Engine of Desire - Engine Series*. Interactive Art Installation (1996)
25. Seaman, B.: *An Engine of Many Senses*. Generative Art Installation (2013)
26. Seaman, B.: *Luminous Hands*. Generative Art Installation (2015)
27. Seaman, B.: *Navigating/Negotiating Sound Architectures of the Night*. Interactive Art Installation (2016)
28. Shaw, J., Kender, S.: *We are like Vapours*. Interactive Art Installation (2013)
29. Small, D., White, T.: *Jardin Poetique Interactif*. Interactive Art Installation (1998)
30. Strauss, W., Fleischmann, M.: *Energie Passagen*. Interactive Art Installation (2004)
31. Strauss, W., Fleischmann, M.: The art of the thinking space: a space filled with data. *Digit. Creat.* **31**, 156–170 (2020). <https://doi.org/10.1080/14626268.2020.1782945>
32. Vesna, V.: *Bodies, Inc.* Interactive Art Installation (1995)
33. Wang, G.: *Manual of the Mustard Seed Garden - Full Volume*, vol. 1–4. Zhonghua Book Company, Hongkong (1986/1972)
34. Wang, X.: *An Architecture Toward Shanshui*. Tongji University Press, Shanghai (2015)
35. Wang, X., Qiuye, J.: *ARCADIA: Painiting and Garden*, vol. I. Tongji University Press, Shanghai (2014)
36. Wang, X., Qiuye, J.: *ARCADIA: Illusion and Reality*, vol. II. Tongji University Press, Shanghai (2017)
37. Wang, X., Qiuye, J.: A contemporary Chinese garden experiment. *Archit. Des.* **88**(6), 24–31 (2018). <https://doi.org/10.1002/ad.2361>
38. Wang, X., Qiuye, J.: *ARCADIA: Contemplation and Construction*, vol. III. Tongji University Press, Shanghai (2018)
39. Wardrip-Fruin, N., Carrol, J., Coover, R., Greenlee, S., McClain, A., Shine, B.S.: *Screen*. Interactive Art Installation (2002-present)
40. Winnicott, D.W.: *Playing and Reality*. Routledge, New York (1989)