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Glenn Loughran

*Technological University Dublin, glenn.loughran@tudublin.ie*

John O'Connor

*Technological University Dublin, john.oconnor@tudublin.ie*

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# Re-worlding the Virtual: Exploring Art and Archipelagic Education through Virtual Environments

Glenn Loughran, Technological University Dublin, [glenn.loughran@tudublin.ie](mailto:glenn.loughran@tudublin.ie)

John O'Connor, Technological University Dublin, [john.oconnor@tudublin.ie](mailto:john.oconnor@tudublin.ie)

## Abstract

This paper expands on the use of virtual environments to address educational questions around social isolation, embodiment and knowledge production. Supported by curricular experimentations with archipelagic thinking, it reflects on the potential for virtual environments to provide novel educational contexts for students to explore the relationship between art and environment at a time of climate transition. Archipelagic thinking is a theoretical framework that emerged out of Island studies and postcolonial discourse in the late 20th century. Emphasising relational flow between islanders, islands, entities and worlds, archipelagic thinking seeks to address the epistemological distinctions between centre and periphery, between the northern and southern hemispheres, what Boaventura De Sousa Santos has called 'the abyssal line' (De Sousa Santos, 2018). Within this context, post-abyssal pedagogies are pedagogies that challenge the epistemic injustices between official and unofficial knowledge, mapped out through geographic location. These theoretical frameworks became the methodological ground upon which a virtual pedagogical experiment was developed in the MA Art and Environment, in west cork. Aiming to create a more embodied educational experience within virtual reality, archipelagic spaces were constructed to support exchanges with local voices and local knowledge. Re-worlding the virtual through these processes, the Virtual Archipelago was further expanded into a European-wide conference on the ethics and politics of virtual reality education in arts institutions. Reflecting on the values and principles that have emerged through these discussions this paper points towards some possible research directions.

**Keywords:** Virtual Environments, Education, Archipelagic Thinking, Artistic Research.

## Introduction

Virtual Education is an emerging discourse and practice that was significantly accelerated over the course of the Covid-19 pandemic. While this event may retrospectively mark an epochal shift in the development of VR education, it is important not to lose sight of the contexts in which prior explorations and experiments have been developed. Historically, many of the most successful applications of educational-technology emerged through distance models of education, motivated by

far-reaching, egalitarian, and democratic principles. For example, The Open University, originally named the *University of the Air*, aimed to provide a broader access route to educational resources for displaced learners that had neither the geographical privilege nor cultural capital to participate in education (Weinbren, 2014). Using advanced technical apparatuses to provide content and communicate with students through television, tape recordings, and phone-lines, the OU became a model of post-industrial, connectivist education (Weinbren, 2014). While the use of technologies in educational practice has always existed, from the textbook and the lectern to the overhead projector (Freisin, 2018), advanced digital technologies such as computers, smartphones, drones, AR and VR have only been a peripheral part of educational practice in the last decade.

Expanding on the distance learning histories of educational technology, this paper presents a pilot project developed using Virtual Reality platforms to explore environmental education in island community contexts. Bridging *pre* and *post* pandemic experiences, the project coincided with the development of an archipelagic master's programme in art and environment located off the west coast of Ireland. Utilising the framework of archipelagic thinking as both material practice and spatial metaphor, VR pedagogies were introduced to support a broader engagement with the biosphere and the technosphere at a time of climate transition. The term 'biosphere' was originally coined by Swiss geologist Eduard Suess in 1875 but the concept as accepted today (European Geosciences Union, 2022) was actually developed by Ukrainian-Russian Vladimir Vernadsky in his 1926 book *The Biosphere*. Biosphere refers to the combination of all the ecosystems on the planet; the zone of life on Earth, where an ecosystem (or ecological system) consists of all the organisms together with the physical environment in which they exist (Tansley, 1935:299). However, we now live in the geological age commonly known as the 'Anthropocene' (Crutzen and Stoermer, 2000:17-18) which is signified by the fact that the global environment is currently shaped by humankind rather than vice versa (Edwards, 2015). This is manifested in the technosphere, where human technology extends its influence into the biosphere for the first time. As a result, human activity is affecting the geological reality of the planet. Simultaneously, the development of VR technology offers an opportunity to extend the exploration of what it is to be human. The philosopher David Chalmers (2022) writing in *Reality+: Virtual Worlds and the problems of Philosophy*, contends that VR is real: 'Virtual worlds are not illusions or fictions, or at least they need not be. What happens in VR really happens. The objects we interact with in VR are real.' Furthermore, he adds: 'Life in virtual worlds can be as good, in principle, as life outside virtual worlds. You can lead a fully meaningful life in a virtual world' (Chalmers, 2022:xvii). Virtual worlds can be understood and engaged with in an archipelagic context, as real environments in their own right.

### *Archipelago as educational form*

The MA Art and Environment (MAAE)<sup>1</sup> was developed over a number of research projects, events and contexts between 2018 and 2020. Emerging out of the already established BA in Visual Art (BAVA)<sup>2</sup> in Sherkin Island, the MAAE aimed to expand on the distance learning ethos of the BAVA, to focus on a multiplicity of geographic sites and educational themes appropriate to environmental art. Building on research developed through the *What is an island?* project (2018–2021),<sup>3</sup> the MAAE viewed islands and archipelagos as important sites of study within the context of the Anthropocene. Central to the shift from an island-based pedagogy to an archipelagic-based pedagogy, was the transition from a ‘root-identity to a relational-identity’, from *place* to *space*. One way to understand this more concretely is to consider how relatively easy it is to stand in Sherkin Island and point towards its beginning and its end, whereas, it is almost impossible to delineate the beginning and end of the archipelago that Sherkin is embedded within, it is utterly decentralised and diffuse. This unique geological dynamic inspired poet and philosopher Édouard Glissant to argue for an ‘archipelagic imaginary’ that was spatialised and rootless, always in the process of ‘relating’ *between* islands, and *beyond* boundaries, and where ‘the imaginary of my place is connected (*relié*) to the imaginable reality of the world’s places, and the inverse is also true’ (Glissant, 1990:47). What is important about this proposal for environmental education today, is the extent to which it enables a profound shift away from normative understandings of globalisation as standardised network, and ‘continental thought’, towards a multi-scalar spatiality that connects locality and world. ‘[C]ontinental thought [...] makes us think that we see the world as a bloc, taken wholesale, all-at-once, as a sort of imposing synthesis, just as we can see, through the window of an airplane, the configurations of landscapes or mountainous surfaces. With archipelagic thought, we know the rivers’ rocks, without a doubt even the smallest ones’ (Glissant, 2009:45)

Thinking through the curricular form of an MAAE, it was important to connect local experiences of climate change to global shifts in planetary consciousness emerging with it. Glissant’s conceptualisation of the archipelago and archipelagic thinking was instrumental to the incorporation of this ambition into the programme, and key to his understanding of the archipelago as both ‘island chain’, and spatial ‘imaginary’ is the concept of *relation*. Emerging through his later work *The Poetics of Relation*, Glissant (1997) defined *relation* simultaneously as the geographical reality of islands and the radical potentiality of those spaces to produce culture. Reflecting on the abyss of the ship’s *hold* as a material historical reality of the slave trade and a cauldron for the formation of new identities in a new world, Glissant defined *Relation* as the space where diversity, ambiguity and hybridity are

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<sup>1</sup> <https://www.art-environment.com>

<sup>2</sup> <http://bavasherkin.com>

<sup>3</sup> <https://whatisanisland.com>

manifest in the void spaces between western systems of thinking and doing. Expanding on this unique correlation between islands and diversity, David Chandler and Jonathan Pugh (2021), recently highlighted the significance of the Galapagos islands in the development of evolutionary theory, ‘Species evolved and adapted differently on the Galapagos because different Island ecologies facilitated and enabled this differentiation. The key word for Darwin was thus “divergence” which emerged from the separation and bounded nature of islands, and in focusing upon this he drew attention to how Islands are powerful differentiating “engines” for life itself.’ (Pugh & Chandler, 2021:11). Such ‘differentiating’ phenomenon can be understood as a ‘patchwork ontology’, which shifts the towards the ways we ‘make, explore, and journey’ through the bio-sphere, rather than merely reflect upon our relational intersections with it (Pugh & Chandler, 2021).

Due to the ‘patchwork’ nature of the archipelago and the island communities it comprises, the use of digital technologies are an important infrastructure for practical delivery of an archipelagic art education. More philosophically, digital technologies and digital culture have become a defining characteristic of our contemporary environment and need to be interrogated and reinvented in equal measure. As Bernard Stiegler and others have suggested, it is necessary to think of both the natural and technological worlds together because they are equally threatened by the same problems of homogeneity and standardisation (Stiegler, 2018). For Steigler, the archipelago was conceived as a means to overcome the standardising image of the network, which tends to reduce the strategic resonance of local realities, by favoring generic structures. Such generic structures often undermine the real and genuine expression of differences. Alternatively, the archipelagic dimension highlights the role of localities (local institutions, local form of knowledges, local practices, local educations, etc.) as agents of the constant transformation of the relations between the partners, where the promotion of a multiversal (and no more simply universal) framework within which differences can proliferate (Stiegler, 2020). Following this analysis, the project was motivated by four key aims:

- To connect students with island communities around the relational dimensions of artistic research in environmental contexts.
- To connect students with island communities around emerging issues concerning the degradation of the biosphere and the technosphere.
- To use virtual platforms as educational tools that can support student engagement with virtual environments.
- To connect radically isolated students and educators at a time of global pandemic.

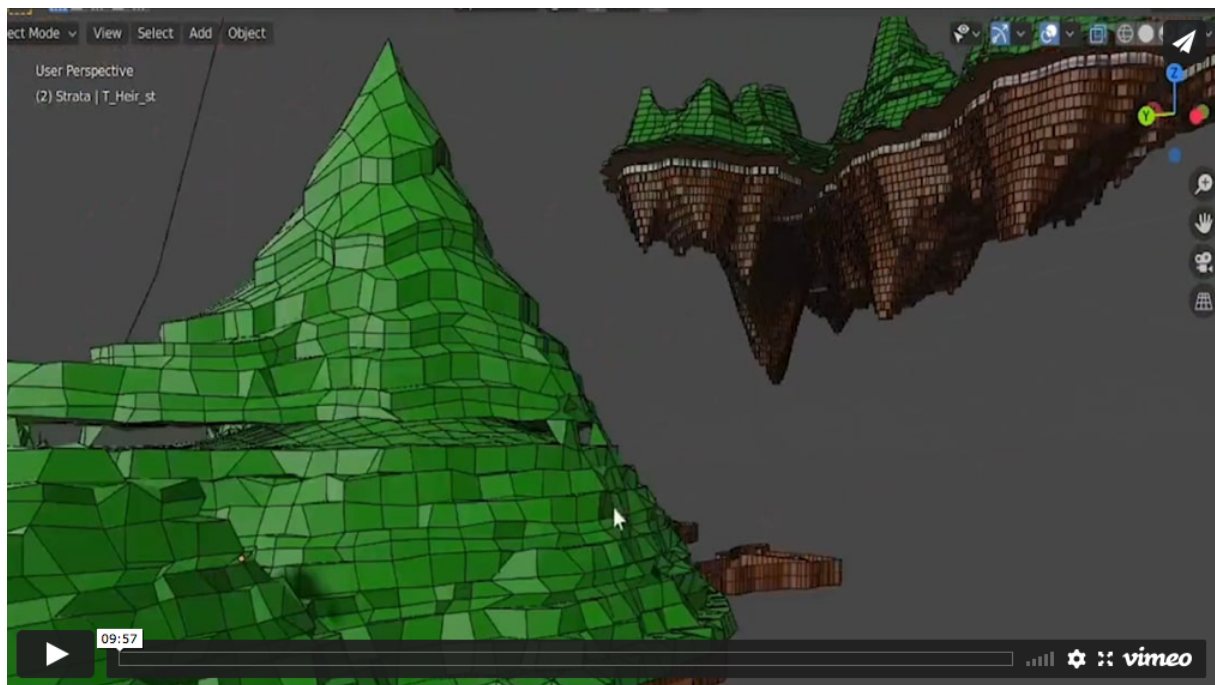


Fig 1: Virtual Archipelago (Image Credit: Glenn Loughran)

### ***Relational pedagogies in the virtual world***

Prior to the mass shift towards online communication that followed the first pandemic lockdown, an immersive, archipelagic, digital-platform was developed to explore the virtual capacities of artistic practice and education. In October 2020, ten Oculus Quest VR headsets were ordered and delivered to the TU Dublin city centre campus in Grangegorman, which were further picked up by a courier service and delivered to a drop-off point in Skibbereen, County Cork. From there, local arrangements were made for delivery to seven students living in seven diverse geographic locations around the region. The students received a VR headset, sterilisation instructions and set-up instructions for the virtual reality platform *Spatial*. The decision to use *Spatial* was educational and related specifically to experiences that are unique to adult education, where the alienating and infantilising effect of educational environments and processes are common. *Spatial* is an open source VR platform, often described as a social VR platform, but which was originally designed as a work space platform for corporate meetings and presentations. Due to this remit, the platform privileged realism, mimesis and spatiality in its design. Unlike many social VR sites, such as Mozilla Hubs, *Spatial* avoided the characteristic over-saturated environments, gamification and multiple-choice avatars. Instead, avatars were based on photogrammetry renderings of individual users and architectural environments were realistically represented and lit.

While *Spatial* was appropriate for use with students on the MAAE it was still necessary to repurpose the programme for more diverse engagements within the visual arts course. Within this context, it is

too easy to assume that certain types of teaching, learning and research are more effective, efficient and impactful than others. Due to the novel and experimental nature of teaching in VR spaces at this time, it was essential to remain open about the methods and techniques used for teaching and learning. For this reason, a balance of educational forms was introduced, allowing equal time to traditional, didactic forms of teaching (chalk and talk), constructivist techniques (workshops), auto-didactic learning (studio-practice/artistic research) and collective study (reading groups). Initially the students were invited into a pre-set *Spatial* environment and asked to develop an artistic response to a close reading of the first chapter of Edouard Glissant's *Poetics of Relation*. To enable a group dialogue with the text, a number of large signposts were staged around the virtual classroom, on which quotations from the text were written. Installed prior to the students' arrival in the classroom, the signposts functioned as memory prompts due to the absence of teaching material to hand. When teaching in VR a teacher cannot use physical notes in a traditional manner, because this would mean taking the headsets on and off. Having the notes embedded within the environment meant that a certain amount of movement was required to direct the discussion, and as a result the notes took on a spatial, as well as close reading dimension. This spatial dynamic supported sculptural-aesthetic responses from the students, using the fabrication and appropriation tools embedded within *Spatial*. So intuitive and complex were the making capacities of these tools that students were able to develop complex, digital sculpture installations with a couple of hours.



Fig 2: Virtual Classroom 1 (Image Credit: Glenn Loughran)



Expanding on this workshop, the students engaged in a specifically designed VR curriculum built to support skills acquisition and critical dialogue over the course of the semester. Providing art students with the capacity to develop artistic work in multiple forms, two-dimensional, sculptural, audio, filmic and performative, was essential to the curriculum and supported by blended skills workshops with digital technicians. With access to virtual making tools such as Blender and Gravity Sketch students gained the confidence to experiment with their own artistic ideas, however, to further compliment the creative dimensions of the curriculum, lectures and readings were introduced to contextualise the uses of technology and to reflect critically on their historical and political development. Introducing a philosophical perspective to these developments, Noel Fitzpatrick presented on the concept of Technogenesis, emphasising the evolutionary impacts of technological apparatuses on human societies, while John O'Connor presented on the possibilities and pitfalls of virtual reality through a cultural historical lens. As each class developed, the content and structure of the rooms were adapted to suit the delivery, with students often being given instructions on how to use the room and how to respond to the material staged within it. In this sense, the classes resembled installations or museum education formats, rather than traditional academic ones.

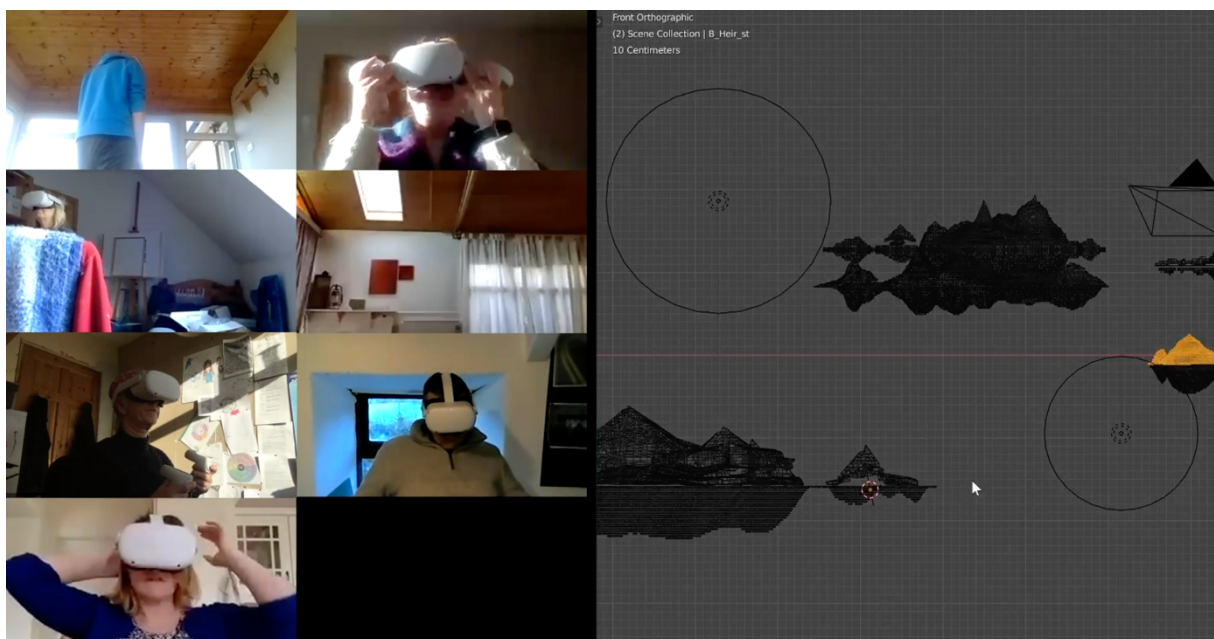


Fig 3: *Virtual Classroom 2* (Image Credit: Glenn Loughran)

Alongside these curricular processes the students were engaged in independent research, connecting with islands and islanders in the archipelago, developing local interviews, environmental field research and artistic research. From these activities the students would organise virtual representations of their research work to be presented to their peers in VR studio spaces. Expanding on the traditional form of



the ‘Crit’ (Newall, 2019) in art education, these dialogical experiences were surprisingly fluid, analytical and generative, where you could experience island sounds and rhythms, such as the wind, birdsong, rustling trees, the sea, motor boats, discuss three-dimensional models that proposed the construction of a floating cinema, floating forests, plant nightclubs, fog harvesting sculptures and audio interventions that represented the voices and experiences of islanders during the pandemic. Throughout this time a large scale virtual archipelago was developed for students and staff on the course, with the aim of presenting the student research in a virtual exhibition at the end of the semester. The islands constructed within the virtual archipelago were modelled on the real-world islands in the archipelago of west cork using satellite imagery. Once rendered, the class was split into three research groups working collectively in each of the following islands: Sherkin Island, Cape Clear and Whiddy Island. Through this process students constructed virtual maquette proposals of work to be realised on the islands in the third and final semester. Staged on smaller island models and supported by research with islanders, these research processes captured the archipelagic imagination and led towards a virtual exhibition for public consumption. Supporting these ambitions, a proposal was accepted by the European League of Institutes of the Arts (ELIA), to expand the pilot project into a European wide conference on the future of the art school, connecting universities and art schools across Europe.<sup>4</sup> Planned as a three-day event in VR, the conference engaged colleagues from five different European universities including, Dublin, Zurich, Amsterdam, Helsinki and Huma University in South Africa. Over this period, the floating virtual archipelagic environment was used as a touring lecture site for presentations and workshops on archipelagic thinking and framed by the students’ exhibition of work. Titled *Sensing the Environment*, the exhibition was staged physically in Uillinn and virtually on the archipelago and attended by participants across all of the participating universities, as well as local audiences. For the students, the experience of speaking about their work to individuals across Europe and South Africa was both exciting and disconcerting in equal measure.



Fig 4: *Towards a Virtual University of the Arts* (Image Credit: Glenn Loughran)

<sup>4</sup> <https://elia-artschools.org/page/ELIAFutureArtsTowardsaVirtualUniversityoftheArts>

Whilst the original motivation for using VR as an educational tool within the course was led by an expanded concept of environment being developed, the global pandemic provided an immanent need and context for it, accelerating its use. Within this, it is important to acknowledge that, this was not entirely novel in educational terms, if we consider how the history of distance education has matured and developed alongside emerging technologies. As has been well documented (Weinbren, 2014), such technologies can enable educational access for disadvantaged learners on a massive scale, challenging dominant hierarchies of social reproduction. In many ways, the radical shift to online learning that took place during the pandemic mirrored the historical trajectories of distance learning, and the VR project was no different in this regard. However, given that most of the students on the course had come through the BAVA on Sherkin Island, which is a distance learning course for isolated learners in a rural environment, then it is fair to say that they were used to exploring the connective capacities of online learning. For example, they had previously been introduced to the virtual world Second Life through a semester long project in their second year.<sup>5</sup>

Nevertheless, the VR project was a substantial upgrade from previous long-distance learning techniques, in the sense that it did not aim solely to provide more content than was available on the course, but rather to provide better environmental contexts in which to explore the content. That is, to explore environmental questions within a contemporary environment. Within this there were some obvious physical challenges worth noting. Firstly, the initial experience of VR is extremely disconcerting, one of the most challenging aspects of which is, to blindfold yourself within the context of the physical environment in which you are situated. Struggling with this initially, the students were eventually able to locate quiet spaces in their home environments that were safe and uncluttered. To support this transition, the project began in Zoom, which was left on live recording in case someone needed to come out of the VR for technical support. Once the students acclimatised to this challenge they were able to relax into it more and eventually became confident wearing and walking about their environments, with the headset on.

Alongside this challenge was the impact of long time periods wearing the headset and working within the virtual environment. Due to the intensity of the spatial immersion and the saturated nature of the visual environments, it was not uncommon for headaches to occur after about thirty minutes. Again, as students became more used to the environments they built up a tolerance for the visual intensity and could stay longer than needed. Subsequently, the sessions were regulated between thirty minutes of activity with a fifteen-minute break, before returning to VR. In total there were six, two-day weekends in the taught programme when students would have been moving in and out of virtual environments, however, they also set up their own rooms and studios in which to explore virtual sculptural practice. Access to a studio space for artistic research was of significant value to the students at a time when

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<sup>5</sup> <https://virtualenvironmentsmodule.com> [See blog entries for February to May 2017]

physical studio space in the college was no longer accessible, and domestic spaces severely reduced. The virtual spaces provided an opportunity to carve out time for creative work and on many occasions, students pointed to the fact that time within the VR studio could be more uninterrupted and less distracting, than in real spaces where smart phones are competing for your attention. Oddly, it seems as if the radical space of virtual reality as an educational space, can function in very similar ways to the traditional school, which aims ‘to provide a safe space for children to develop focused learning away from the distractions of family and work’ (Freisin, 2019).

Within the overall context of the course the project took place in the second semester, titled: *Sensing*. This module aimed to compliment the first semester on *Mapping*, by introducing alternative theories of knowing and learning beyond the rational cognitive epistemologies of the first semester. Throughout this semester the focus was on combining indigenous knowledge, as a sensing of the environment, with aesthetic knowledge that redistributes the sensible through aesthetic form. In support of this, the students set up online interviews with key stakeholders on the islands to make initial connections to the community and geography of the island. Expanding on these interviews, individual students contacted local actors to connect around their artistic research projects. These connections began to inform the various ways that the students thought about the VR space, where they began to use it as a research space for presenting their ideas and discussions with islanders but also as a space to stage their proposals for work on the island, and to develop group discussions in spatial ways that they could not in the Zoom spaces.



*Fig 5: Student Research (Image Credit: Glenn Loughran)*

What was unique to this experience was the surprise of scale, that work could be made to scale on a representation of the island and viewed three dimensionally from and top down viewpoint, or that it could be scaled up into a believable, life-size sculptural form. To be able to walk around student proposals in a three-dimensional space was a significant upgrade from look in at three-dimensional work on a two-dimensional surface. Equally, when viewing two-dimensional work within the context of a three-dimensional space, the representation of the work at scale and with the loss of resolution was significant. Imagine standing in front of a Jackson Pollack painting and being able to experience first-hand the complexity of the web of paint, or to feel the weight of a Richard Serra arc as you stand beside it. The superior representation of work in the virtual field led to much more in-depth discussion about the work than in Zoom, however, it was more difficult to sustain the length of that discussion due to the intensity of the immersion within the virtual.

Finally, with regards to connection and relation, the experience of being in a room with friends and colleagues after such long periods of isolation was quite profound and unexpected. One of the uncanniest moments within the first VR session occurred when two very close friends first met in the virtual classroom. After giggling with amazement over how real their avatars were, they pretended to hold each-others hand. Unexpectedly, at the moment of their touching, a short vibration was produced in their Oculus handsets and a few visual sparks flew. So extreme was this experience in a post-touch pandemic world, that each student became emotional and slightly unsettled. While the sensation may have come through a prosthetic experience, it was nevertheless heightened by the isolation of the pandemic, pointing towards the very real possibility of sensation being a key character of the virtual educational experience in future scenarios.

To think about relation in this way is to think about it as the site of creativity, diversity and experimentation, the absence of which was severely impacted by government-imposed routines and restrictions. A significant cause of fatigue within the pandemic was the lack of novelty experienced in everyday life. For French Philosopher Alain Badiou the concept of novelty is an ontological category, that is, it is a phenomenon that uniquely defines the human subject as ‘a subject to the event of the new’ (Badiou, 2006). It is something we need and something we seek out in our everyday lives, no matter how small or insignificant. Since education is a deeply creative experience, and art education particularly motivated by creative processes, the absence of creativity and novelty had a significant impact on the students. Traditionally art students are used to being given challenging briefs that demand creative resolution, materially and conceptually. The pandemic placed significant barriers to this kind of experience. This is not to suggest that individuals did not respond creatively to the imposed limitations, quite the opposite, imaginative actions irrupted in educational methods across many disciplines, however, what it did lead to was a deeper discussion about the role of embodiment in educational processes.

### ***Re-centring virtual education in uncertain times***

In the broadest sense, the project aimed to provide a creative space for students to think critically about the digital environment within the context of environmental education in the Anthropocene. Importantly, these explorations were developed in dialogue with field work in the natural environment and on islands in the archipelago, rather than as a separate module on virtual worlds. In this sense, the VR research project was initiated in response to a set of localised problems, as opposed to problems inherent to VR itself (some of which emerged through the process). Importantly, by the stage of its implementation the students had already been in and out of lockdown for almost a year and a half. After the adrenaline rush experienced through the pandemic in its early stages, many students had grown used to the rhythm of online education, and a certain weariness had begun to set in. By this time, most students were struggling with the precariousness and uncertainty brought on by pandemic restrictions, but also a disconnect from the norms of an art education which traditionally focuses on spatial, embodied presentations of work, collective discussion/critique, and collective studio dialogue. As has been well documented, this dynamic set of performative educational modes had, almost overnight, been reduced to a single portrait format, within a grid like frame, which was often elliptical due to variable broadband connection.

In response to this issue, the project aimed to create a connection between the students using VR, however, beyond this, it also aimed to cultivate a relational aesthetic education, as described above (Glissant, 1990), to use the social capacity of VR spaces to think critically and performatively about dislocation and relation. In this sense then, the first workshops aimed to develop an embodied enquiry into the nature of relation at a time of its loss and beyond the standard tropes of connectivism. It also follows that the main tool through which we mediate a virtual environment, the avatar, becomes part of an extended body-schema, as identified by Merleau-Ponty (2012). Stiegler (1998) believed that understanding technology as *technics* (from the Greek *technē*, to make or construct, referring both to technology and the process of creating it) means that human beings cannot be separated from technology. It may seem ironic or contradictory, the experience of taking on a virtual body in a virtual space was initially much more embodied than having no body, and no environment. While there is no replacing the teaching body, interacting with the student body in a physical classroom, there were significantly more embodied educational experiences within these environmental spaces than other VLE platforms being used at that time (Zoom, Teams etc). Of course, the quality of these experiences is limited to the length of time that you can actually spend in them, and while this is an issue that needs to be addressed if any sustained educational engagements is to take place, it was, nevertheless surprising how much more focused time was in the VR environments. Not unlike the enclosed industrial time of the traditional classroom, the focused nature of these experiences offered a direct

alternative to the inattentive experiences of screen-based learning that we have come to accept as a necessary evil of technological innovation.

These experiences provided much needed novelty and excitement for the students at a time of extreme routinisation and restriction, and they also raised important pedagogical questions around the potential for embodied knowledge experiences to be staged within the context of virtual environments. If the technological dimension of this experience can be seen as an important advance on the problem of educational disembodiment, then there were also minor advances in the re-worlding of the VR environment. Eventually, the standardised spaces of generically constructed virtual spaces became a challenge for the students and they began to play with creative ways to incorporate the local vernacular of the real-world island environments into the VR spaces that they were using. Through such world-centred, world-making educational practices the standardised and infantilising spaces of play pedagogy that have dominated the experience of VR education, were transformed into spaces of critical dialogue and innovation. Where standardised spaces and experiences often marginalise the subjective, critical capacities of the learner through the twin ideologies of efficiency and effectiveness, a world-centred education has the capacity to reinstate the educational subject as an agent of responsibility and change in the world, both virtual and real. If these experiments provoke important educational questions concerning the potential for educational subjectivity to emerge through virtual spaces, what threatens this possibility, is the extent to which virtual platforms and virtual worlds are surveilled by corporate power and the level of educational autonomy that can be maintained and protected.

The development of VR for education is occurring at a time when the very nature of the university is being challenged in wider society. Michael D Higgins (2021), President of Ireland, academic and poet, warned of the increasing threat not only to academic freedom but the very nature of the university as a place of independent learning. He argues that the ‘community of scholarship’ is in peril and we ‘must now consider not just the loss of academic freedom at the level of the individual scholar but ... the loss of the institution of the university itself, even the space of university discourse.’ (Higgins, 2021). The ideal of the classroom has always been a privileged space; a safe place where students and teachers are free to explore ideas without fear of retribution. The same applies to academic research spaces, laboratories and studios and the value of this privilege is recognised in many jurisdictions where academic freedom is protected by legislation precisely to ensure that unorthodox, controversial, even dangerous thinking can flourish thus leading to new insights, developments and inventions that benefit humankind (Myklebust, 2020). There are no obvious institutions to replace the fostering of such activity so if it is lost to the university it may well be lost to society. Higgins’ (2021) warning that the ‘ruination of the university tradition ... is at hand’ and his challenge to ‘the community of scholarship ... to robustly defend the university tradition’ is very real. This challenge to the university

in the physical campus should raise concerns around the perhaps greater challenges that will arise in the virtual campus. The protection of academic freedom is equally important in both environments. Yet, much of the technological development required to support affordable VR is being done by corporate entities. Many are young entrepreneurial start-ups with brilliant thinkers at the helm and who, with support from powerful venture capitalists, are capable of breaking previous technological and social boundaries to bring new and exciting products to the market. Others operate within the powerful global corporations that have dominated IT for decades. All recognise the opportunities in this space and are seeking the potentially significant rewards that are likely to be won by those who are successful. Giving such tech billionaires unbridled opportunities to influence the future direction of society has its dangers. Many exhibit questionable notions about the needs of society and exploitation of their fellow human beings. John Carmack, former CTO of Oculus (before the company was bought by Facebook, now known as Meta) said during an interview in 2020 ‘People react negatively to any talk of economics, but it is resource allocation. You have to make decisions about where things go. Economically, you can deliver a lot more value to a lot of people in the virtual sense’ (Gault, 2021). To hear an influential developer suggest that VR is under consideration as a solution to dwindling natural resources in the real world should set the warning bells ringing extremely loudly. The head of gaming company Valve Corporation, Gabe Newell, was even more explicit when he spoke about the development of brain computer interfaces (BCIs) during an interview in New Zealand and discussed ‘the near-future reality of being able to write signals to people’s minds – to change how they’re feeling or deliver better-than-real visuals in games’ He went on to suggest that BCIs ‘will lead to gaming experiences far better than a player could get through their *meat peripherals* – as in, their eyes and ears.’ If that isn’t enough to cause grave concern he adds that it will soon be possible to edit feelings digitally saying the benefit ‘could be the reduction or total removal of unwanted feelings or conditions from the brain, for therapeutic reasons’. The company is contributing to projects developing synthetic body parts in exchange for ‘access to leaders in the neuroscience field who teach us a lot’ (Appleby, 2021). This is a long way from producing games to amuse teenagers and demonstrates the ambitions of a wealthy elite that acknowledges the global crisis but envisages different solutions for the rich and the poor.

Given concerns about the decline in the nature of the university as a place of independent learning and the alarming views of those developing VR technology it seems incumbent on Higher Education to tread carefully when engaging with this new technological paradigm despite the promise of great potential. Several contenders can lay claim to the epigram ‘you are not the customer; you are the product’ but O’Reilly (2017) concluded on investigation that the notion originated in the latter half of the twentieth-century and was first articulated by artists Richard Serra and Carlota Fay Schoolman in 1973. It has taken on darker connotations in the online digital realm where considerations of privacy,



protection of data, respect for identity and control of access are already the dominant concerns. The cavalier approach of global corporations to private and personal data as exhibited by Facebook, Google and Amazon for example, is a matter of public record. Following the decision made by Twitter to ban Donald Trump from its platform after the attack on the US Capitol in January 2021 there was a perceptible twist in the public discourse. Despite the concern around Trump's abuse of the forum – causing offence, promoting lies and condoning violence – the question now shifts to whether or not Twitter is entitled to exclude any opinion, no matter how heinous. Surely, free speech is a fundamental principle that must be respected above all else? After all, the very company that had facilitated Trump for many years now appeared to be displaying extreme censorship? Was it attempting to act in the public interest or simply protecting its own commercial interests? Alizadeh *et al.* (2021) argue that content moderation is not merely a technical issue, it is also a political issue 'which has become increasingly contested due to its significant consequences for democratic accountability and civil liberties'.

It is important for the future of society that debate around the development of any new technology is fostered and encouraged. Marshall McLuhan's thinking around 'electric media' and technology in general has been summarised pithily: 'we shape our tools and thereafter our tools shape us' (Culkin, 1967:51-53, 71-72). VR is already shaping our future society and its potential impact on education requires particular scrutiny. Arising from our experience developing projects and teaching in VR we believe it is important to propose some fundamental principles that need to be considered in the development of VR education. Informed by the writing of Eck, Maalouf, Glissant, De Sousa Santos and others in order to move away from the habitual thinking dominant in the Western approach to knowledge creation opens new opportunities that can support this development.

### ***1. Identity and Entitlement***

Sir John Strachey, an English civil servant speaking of India at the University of Cambridge in 1888, claimed that 'there is no such country'. He was expressing the Victorian belief employed to justify the continued occupation of the continent as part of the British Empire (Eck, 2012:106). It was, of course, expedient to exalt the nation-state as a natural, rather than a constructed, reality. Eck (2012) explains that 'through the lens of the nineteenth-century West, a lens ground to bring to focus a particular political conception of the nation-state, "India" did not exist'. This attitude remains a powerful and influential idea in the Northern Hemisphere almost a century and a half later. However, India's diversity and capacity for multi-layered complexity along with a refusal of singularity seems contemporary and even more relevant in today's world than it might have been then. This is reflected in Maalouf's (1996:2) description of personal identity as an equally complex conjugation: 'So am I half French and half Lebanese? Of course not .... I haven't got several identities: I've got just one,

made up of many components in a mixture that is unique to me, just as other people's identity is unique to them as individuals.' The entitlement of identity is a fundamental right. It is the first principle to be encoded in a VR ecosystem for education.

## ***2. The right to opacity***

In *Poetics of Relation* Glissant (1997) demands the right of the oppressed to opacity in order to counteract the one-way transparency imposed by colonialism. He argues that the theory of difference is invaluable because it made possible 'the rightful entitlement to recognition of the minorities swarming throughout the world and the defence of their status'. Adding, however, that 'difference itself can still contrive to reduce things to the Transparent' he concludes the problem arises from the lens of Western thought: 'in order to understand and thus accept you, I have to measure your solidity with the ideal scale providing me with grounds to make comparisons and, perhaps, judgements. I have to reduce ... I admit you to existence, within my system. I create you afresh.' Therefore we must 'agree not merely to the right to difference but, carrying this further, agree also to the right to opacity'. He reasons that the 'opaque is not the obscure ... it is that which cannot be reduced' (Glissant, 1997:189–190). The 'othering' of the colonised, the dehumanisation of the enslaved, is based on the lens of exploitation and denial of any alternative 'reality'. Without a recognition and acknowledgement of this there cannot be an honest conversation and the notion of transparency is rendered ridiculous.

The entitlement to opacity is the second principle to be encoded in a VR ecosystem for education.

## ***3. Communities of practice***

Developing the BA in Visual Art with, and for, an island community off the south-west coast of Ireland at the turn of the last century the team identified three pillars during the initial discussions: partnership; relevance and sustainability (O'Connor, 2001). The first, partnership, is the most important because it was predicated on equality between the university and the community. The success of the programme was predicated on the recognition that each partner has access to knowledge that is valuable to the other. For instance, at its most basic level, the university brings curriculum expertise while the island community understands the art of survival in adverse conditions. The understanding that isolated communities are resources of knowledge was recognised by Norberg-Hodge (1992:5) who proposes that cultures like that of Ladakh, in the northern Indian Himalayas, can point the way towards a 'sustainable balance – a balance between urban and rural, male and female, culture and nature'. A community of practice (Wenger, 2010) evolved from the partnership between the university and the island and provided support for the project, nurturing and nourishing its continuing development.

De Sousa Santos (2016) identifies the ‘global South’ as ‘a metaphor for the human suffering caused by capitalism and colonialism on a global level’. Not only located in the southern hemisphere this global South exists in the geographic north in isolated, excluded and silenced communities. ‘The problem is that after five centuries of “teaching” the world, the global North seems to have lost the capacity to learn from the experiences of the world. In other words, it looks as if colonialism has disabled the global North from learning in non-colonial terms’ and is unable to allow for the existence of any knowledge other than the ‘universal’ knowledge of the West (De Sousa Santos, 2016: 18–19). He suggests that these epistemological differences have resulted in an ‘abyssal line’ which reinforces the problems identified with the Anthropocene.

The end of the Gutenberg Parenthesis (the era of the printed word) has compounded this contemporary babelisation, ushering in the metamodernist era where, to be fluent, we now have to be metaliterate (Hill, 2020). Participation in digital (and therefore virtual) culture requires the ability for informed, reflective and critical thinking. Acceptance of diverse forms of knowledge on an equal basis to support communities of learning and communities of practice is the third principle to be encoded in a VR ecosystem for education.

#### ***4. Open Source and freedom of access***

Concerns about the threat to academic freedom and the tradition of the university lead to a legitimate suspicion of the corporate sector in the development of VR for education however, it should not be the goal to exclude the sector. Purdue University and its VR technology partner Kitware developed an immersive learning programme for nursing students using the Oculus Quest HMD to produce an affordable and effective training experience. Both agree that ‘open source software naturally supports a service business model’ because it enables others to take advantage of the software platforms and avoids vendor lock-in. ‘While Kitware encourages open source software, data sharing, and open access publication whenever possible, the company also respects the need for proprietary solutions due to competitive, privacy, security, and regulatory restrictions’ (Kiggins, 2020). Such an approach would appear to be most appropriate for the Higher Education sector and further research into possible structures around this type of collaboration are to be encouraged. Nevertheless, Open Source and freedom of access is the fourth principle to be encoded in a VR ecosystem for education.

#### ***5. Impact on the biosphere***

The clean and pure environments most commonly presented in VR can mask some disturbing facts. According to writer, artist and technologist James Bridle (BBC, 2019) ‘Computer systems draw a huge amount of energy. Already it’s estimated that computer use around the world is responsible for more greenhouse gas emissions than the entire airline industry’. This means that the server farms

springing up around the world to support cloud computing, including our access to virtual worlds and VR, is having as significant an impact on the physical environment as if we were flying to these locations. As the technosphere continues to encroach on the biosphere exhausting the planet's ability to renew the resources needed to support human life the inevitable conclusion has been clear for some time. *The World Scientists' Warning to Humanity* (Ripple *et al.* 2017) bluntly states that 'We are jeopardising our future.' A responsible and accountable approach to sustainability is the fifth principle to be encoded in a VR ecosystem for education.

## Conclusion

Academics experimenting with VR technologies for any length of time will be familiar with the practical issues arising when attempting to harness them for teaching and learning. While, it became clear during the pandemic that remote learning has earned its place on the curriculum, arguably, this has been a greater revelation to those engaged in the practice-based disciplines where physical activities in workshops, labs and studios are a fundamental part of the educational experience. At this time, lecturers and students had no choice but to experiment with new approaches and develop appropriate practices as required (Alsuwaida, 2022).

The Virtual Archipelagic programme is an example of such experimentation, where virtual worlds enabled a relational space for communication and dialogue around the study of contemporary environments at a time of climate transition. Within this, the Virtual Archipelago also provided a contextual space in which to ask critical questions about the politics of technological development (techno-genesis), and the geo-politics of centre-periphery relations, as they become increasingly destabilised and fragmented by the Anthropocene (Pugh & Chandler, 2020). More specifically, it provided a novel context for students to explore the possibilities of creative work and creative time during a period of radical isolation and a space for educators to begin to develop educational questions around educational problems, through virtual reality. In the Virtual Archipelago those questions concerned the role relationality, embodiment and creativity in digital education, but many more questions have also emerged around the systems and structures underlying our engagements with virtual reality in education.

History has taught us how technical apparatuses can be powerful tools to break down educational disadvantage and exclusion (Weinbren, 2014), however, it has also taught us that problems can arise from many quarters. With regards to the use of advanced digital technologies in educational settings, particularly Virtual Reality, there are a number of emerging threats: security issues with accessing networks on a university campus; attempts to convince cautious finance departments to fund the investment in technology; addressing governance policies and procedures that were not written with this technology in mind; concerns around General Data Protection Regulation (GDPR); academic

quality assurance and so on. All of this points to a clear need for applications that will satisfy the particular requirements of universities and consequently, the next stage of development within this research.

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