



The Deep Listener

Jakob Kudsk Steensen

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Serpentine Augmented Architecture
in collaboration with Google Arts & Culture
and Sir David Adjaye OBE

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Foreword

Hans Ulrich Obrist
Artistic Director, Serpentine Galleries

The Deep Listener by Jakob Kudsk Steensen (b.1987) is the inaugural Serpentine Augmented Architecture commission, a new programme developed in collaboration with Google Arts & Culture and Sir David Adjaye OBE that brings together the Serpentine's expertise in commissioning new architecture with our exploratory work in the field of advanced technologies. After nearly two decades of the annual Pavilion commission, the Serpentine is looking to the future and the production of new realities through the creation of a platform for architectural experiments capable of rethinking spatiality in a non-physical world.

The Deep Listener was selected from over 350 applications to a global open call for creative practitioners to imagine new city spaces and speculative scenarios for the built environment using augmented reality (AR) at the Serpentine Galleries in Kensington Gardens. AR is a technology that has the potential to radically challenge our understanding of how cities might function in the future, by creating a highly visible interface between the physical and digital infrastructures that surround us.

Jakob Kudsk Steensen is a Danish artist based in New York, whose captivating virtual reality and video installations intertwine technology, artistic imagination and storytelling with living organisms and the environment, inviting viewers into new ecological realities. His research-based practice emphasises embedded fieldwork to gather and collate organic materials and interdisciplinary collaboration across art, science and technology in order to conceive complex worlds and ecosystems. Inspired equally by ecology-oriented science fiction and the latest ecological research, Kudsk Steensen creates fully immersive experiences that challenge our perception of time and space.

The Deep Listener is an immersive AR and spatial audio guide to the specific living ecosystems that live within Kensington Gardens and Hyde Park. Kudsk Steensen set out to use the notion of an augmented architecture to create new networks of interaction with the spaces that surround

the Serpentine; researching the park's flora and fauna, weaving links between air pollutants, hybrid tree species and the declining bird and insect populations. Kudsk Steensen's project proposes that digital world building can in fact entangle us with the natural world rather than separate us, training our attention on the details of how our actions create irreversible change to those environments and the biodiversity it plays host to – a necessity in light of our current environmental emergency.

We are sincerely grateful to Jakob Kudsk Steensen for conceiving and developing such an ambitious project at the Serpentine and for his dedication and enthusiasm throughout its realisation. We are thankful to the incredible team of collaborators without whom the project would not have been possible: Ivaylo Getov for his extraordinary skill developing the commission together with Troy Duguid; Matt McCorkle for the work's extraordinary soundscape, Reese Donohue and Emre Tanirgan for the development and implementation of spatial audio tools which are so integral to this project; Cecilia Serafini for the beautiful user interface and graphic design; Rindon Johnson and Sam Bardsley for their work to provide the narration; Jazia Hammoudi for supporting the research process and Dr Veronica Zamora-Gutierrez and Dr Alex Bond for being so generous with their expertise. Thank you to Ben Evans James who produced the initial phases of the project. We are grateful to Nigel Schofield and Vilte Grigaityte at MDM Props for making the fabrication of the sculpture possible and to MTEC Fine Art for its installation in the park, in particular David Williams, Manuela Astore, and Chris Sullivan.

Our deepest gratitude to Google Arts & Culture for their partnership on this project, in particular Yonca Dervişoğlu, Jon Wiley, Amit Sood, Laurent Gaveau, Freya Murray, Suhair Khan, Hannah Andrews, Clare Brooks, Natasha David, but also many more who have fed into this ambitious project. For spearheading the development of this programme, we thank Sir David Adjaye OBE, Architect and Trustee of the Serpentine Galleries. Sincere thanks to our

selection committee who worked tirelessly to shortlist and select the final commission: Virgil Abloh, Sir David Adjaye OBE, Yonca Dervişoğlu, Amira Gad, Ivaylo Getov, Freya Murray, Yana Peel, Amit Sood, Ben Vickers, Kay Watson, Jon Wiley and Greg Williams.

We would like to thank Bloomberg Philanthropies for partnering with us on Serpentine's Digital Engagement Platform. We are also grateful to The Royal Parks for their support in helping us achieve our innovative projects, as well as our advisors AECOM and Weil, who offer their invaluable expertise to help us realise the ambitions of the artists with whom we work.

The Council of the Serpentine is an extraordinary group of individuals that provides ongoing assistance to enable the Galleries to deliver its ambitious Art, Architecture, Education and Live Programmes. We are sincerely appreciative, too, for the support from the Innovation Circle, the Americas Foundation, the Asia Council, Patrons, Future Contemporaries and Benefactors of the Serpentine Galleries.

The public funding that the Serpentine receives through Arts Council England provides an essential contribution towards all of the Galleries' work and we remain very grateful for its continued commitment.

A special thanks to the Live Programmes team who curated and produced the COS x Serpentine Galleries Park Night with Jakob Kudsk Steensen: Claude Adjil, Kostas Stasinopoulos, Holly Shuttleworth, Jack Birch and Olivia Klevorn.

Finally, we would like to express our gratitude to the remarkable Serpentine team: Ben Vickers, CTO; Julie Burnell, Head of Construction and Buildings; Kay Watson, Digital Curator; Amira Gad, Exhibitions and Architecture Curator; Sophie Netchaef, Strategic Projects Manager; Eva Jäger, Assistant Digital Curator; Alexander Boyes, Producer; they have worked closely with the wider Serpentine team to realise this project.



Introduction

The Deep Listener (2019) by Danish artist Jakob Kudsk Steensen is an audio-visual ecological expedition through Kensington Gardens and Hyde Park, the area surrounding the Serpentine Galleries. Designed as an augmented reality and spatial audio work downloadable as an app for mobile devices, it is both a site-specific public artwork and a digital archive of species that live within the park. It pushes the utility of augmented reality and technological tools to transform our spatial understanding of the natural world. The commission expands upon Kudsk Steensen's practice of merging the organic, ecological and technological in the building of complex worlds in order to tell stories about our current environmental reality. Using tools and platforms from a range of fields including video games, computer-generated images and film and inspired by ecological science-fiction and scientific research, Kudsk Steensen creates a form of 'slow media' that uses the technological to foster attention rather than distraction.

Selected as the first Serpentine Augmented Architecture commission, Kudsk Steensen responded to the global open call for new forms of architecture by examining the systems and infrastructure of the park and its species, and the legacy of human impact across time. At the core of the work is the London Plane Tree, a hybrid of a sycamore and plane tree from different sides of the world, that functions, as Kudsk Steensen describes, as 'an early form of bio-architecture'. Planted liberally throughout London during the Industrial Revolution, the tree can

withstand extremely polluted conditions and the bark absorbs pollutants to protect the tree itself and clean the air we breathe, before it is subsequently shed. The bark becomes an archive and historical document of particles and pollution that connects our bodies to the species that cohabit the park.

The Deep Listener invites you to be guided on a journey to both see and hear the sights and sounds of five of London's species: London plane trees, bats, parakeets, azure blue damselflies and reedbeds, that are part of the park's ecosystem but might otherwise be ignored; intangible or simply invisible. Drawing on the principles of deep listening, a slow and embodied process of attentive and embedded listening in order to reflect and learn, Kudsk Steensen has collaborated with the field recordist and sound designer Matt McCorkle to represent five species as sound. Mirroring the process of field work undertaken by Kudsk Steensen, both the audio and visuals within the project are drawn directly from organic source material gathered from a period of embedded research within Kensington Gardens and Hyde Park. These organic materials are then transformed through digital processes to be re-embedded within the same context. As you move through the augmented reality encounters of the commission, these soundscapes can be sped up and slowed down according to your proximity to the ecological visualisations, in order to reveal the complexity and nuances of non-verbal aural languages and shift your own relationship to time. Through these interactions your own body becomes the mechanism to alter the environment around you, and the technology becomes an active form of communication between the human and non-human actors in the park.

Through *The Deep Listener*, Kudsk Steensen builds an experience for users to explore the sublime and vexing power of our ecosystem. The park becomes, as it has throughout history, the architectural backdrop to access the natural world that exists within the city.

Artist Biography



Jakob Kudsk Steensen (b. 1987) is a Danish artist based in New York concerned with how imagination, technology and ecology intertwine. His works range from immersive VR ecosystems to mixed reality installations bridging physical and digital worlds, which invite audiences to enter new ecological realities. He collaborates with NGOs, residencies, scientists and artists from different fields and ventures on excursions where he collects organic material, which is digitised and converted into digital worlds using 3D scanners, photogrammetry, satellite data and computer game software. Inspired by ecology-oriented science fiction and conversations with biologists and ethnographers, his projects are ultimately virtual simulations populated by mythical beings existing in radical ecological scenarios.

Kudsk Steensen has exhibited internationally at the 5th Trondheim Biennale for Art and Technology, the Carnegie Museum of Art, GUEST, GHOST, HOST: MACHINE! Marathon, Serpentine Galleries, Jepson Center for the Arts, Time Square Midnight Moment, MAXXI Rome, Frieze London, Podium, and Ok Corral. He is currently a finalist for the Future Generation Art Prize 2019, and he has received awards from the Danish Arts Foundation, The Augustinus Foundation, and the Lumen Arts Prize. His work has shown at Sundance, TriBeCa and Cannes among other film festivals. Steensen is an alumni of NEW INC, a technology and culture incubator by The New Museum in New York.

Artist Statement

Jakob Kudsk Steensen

We live under multiple temporal conditions where the causality of actions on the climate may reveal themselves centuries apart. Simultaneously, technology transforms faster than humans can comprehend and adapt to. Never has there been a world of this kind, we need to retune ourselves to new realities and add a sense of wonderment of the world.

The Deep Listener is a guide to the park that enables deep listening to species in the landscape, inspiring new perceptions of ecological timescales. By moving physically through space, you can use the app to listen to bats, parakeets, damselflies, trees and reedbeds in otherwise unhearable ways. It is site-specific to connect local ecologies across time and uses technology to expand our senses. Just as ornithologists slow down bird recordings to decipher complexity in their communication as a way of analysing population health, *The Deep Listener* slows down and remixes environmental recordings to allow for ecosystems to be heard in new ways.

For the past months I have embedded myself within Hyde Park and Kensington Gardens, not leaving the area by more than a few blocks. I believe that you need to be immersed in an environment to open up your imagination and find new perspectives on it. I have photographed

trees, leaves and lichens which I have transformed into digital organic infrastructures you can visit through AR in the park.

A sustainable future is built together, and *The Deep Listener* has been created by a team of inspiring individuals across art, technology and science: Images and recordings of bats by biologist, Dr. Veronica Zamora-Gutierrez, have been transformed into digital creatures that mimic a bat's navigation through the park using sound; The feathers of invasive parakeets have been warped into imaginative singing creatures with the help of the Natural History Museum; With the help of collaborator Matt McCorkle, Azure blue damselflies from the Serpentine lake have been converted into a singing swarm-creatures which can be slowed down or sped up as you move through space.

Eva Jäger, Assistant Curator at the Serpentine Galleries, walks through the park on her way to work everyday. Eva told me she had never noticed the presence of blue damselflies in the park until she worked on *The Deep Listener*. It is this attention and awareness that I hope *The Deep Listener* revitalises, creating a sense of ecological wonderment by fostering intuitive, slow and imaginative explorations of multiple worlds around us.



The Commission

The Deep Listener is a site-specific commission. If you are not at the Serpentine Galleries, or in Kensington Gardens or Hyde Park, you will still have an audio-visual experience of the five species living in the park but it is designed to be seen in its local context. All of the information contained within the app can still be viewed when you are away from the Galleries and out of range.

HOW TO USE IT

- 1 Go to augmentedarchitecture.org
- 2 Select a link to download *The Deep Listener* from either the App Store or Google Play Store to your mobile device*
- 3 Go to *The Deep Listener* sculpture located in the grounds of the Serpentine Gallery, this is located to the south west of the main entrance of the Gallery.
- 4 Open the app and follow the welcome guide. You will receive notifications that request
- 5 *The Deep Listener* app is an interface to experience five species that live within the park. See the London plane trees at the site of the sculpture and then follow the map to explore a journey through the park where you will visit the bats, reedbeds, parakeets and azure blue damselflies.

If at any point, you can no longer see the augmented reality or hear the audio, restart the app.

(*) iOS: supported on iPhone 6s and above. Android: requires ARCore support and Android 8.0 or later.

Jakob Kudsk Steensen Hans Ulrich Obrist

In conversation

HUO: Could you tell us a little about *The Deep Listener*; how you came up with the idea and how you arrived at its title?

JKS: *The Deep Listener* is an augmented reality project that is accessed via a cell phone. *The Deep Listener* navigates you around the entire park. I worked with a collaborator, Matt McCorkle, who creates audio for natural history institutions, and we have made audio recordings of bats, parakeets, of roots in the earth and different things in the landscape. As you're walking around with your device, you're physically experiencing different audio layers. For example, there's a tree by the lake that has actual parakeets around it. There's a few mythologies surrounding their origin: some people think that they escaped in the '90s, others suggested they were brought over as part of a film in the '70s – and when you walk by the tree with your phone you'll be walking through a space with the birds' language slowed down. When slowed down you can hear a complexity in their language not normally perceived by our ears. So, with a cell phone, and this *Deep Listener* project,

we have augmented your senses in the park and how you experience the species here.

Another key species in this project is the London plane tree. The tree was created from different kinds of sycamore trees widely distributed across London in the 1700s and 1800s to combat pollution. It takes 150 years for pollution to go through the tree's bark and it is a central entity within *The Deep Listener*.

So I've been working with different species in the park and digitising textures from them within the landscape itself. Then through the phone you experience the same ecosystem that you are already a part of in new ways. It is an artwork and a map, a way to reimagine or spark some interest for things that are already here in the park.

HUO: There is an increasing liberation from 'the loop' and we've seen a number of works addressing this over the last couple of years such as Ian Cheng's *BOB: Bag of Beliefs*, where his exhibition at the Serpentine (2018) had a central nervous system and was never the same twice. *The Deep Listener*, as with all your work, uses

the artwork as a living organism. Can you please tell us about this process?

JKS: What I do is remix landscapes to create simulations. So everything you see in my work is based on actual textures and audio from species and things, that then becomes something new.

In *The Deep Listener*, the artwork itself is running on your phone, and you're accessing that organism or that ecosystem. You can look at a tree on a microscopic scale, and these things just exist on their own, regardless of where in the project you are looking. So it's very much more like a spatial or corporeal experience. A park is a wild ecosystem, but it's also very clearly designed: they have an architecture and pathways, and where species are positioned and how they relate to each other is important. Are they fighting each other or are they helping each other? The way I work is building these simulations, and then using different mediums to give people access. To me it doesn't matter how a work is experienced, whether it is in a headset, on a phone or on a projector; it's more that there is some kind of medium that allows you as a human, something in your senses, to access these other worlds, and they're based on real things that are transformed or evoke some kind of curiosity or new imaginations of ecosystems.

HUO: Before you worked with augmented reality you began with painting. You then worked with video, and then video games and virtual reality, followed by installations and finally augmented reality again. Can you tell us about how and when the virtual took over your practice?

JKS: As a teenager, my dream was to be an animator, either in comic books or for video games, and to build virtual landscapes. Then

I started my education, I went to art school, I began painting, because that's what you did in art school, and then I made paintings of virtual landscapes. The more I did that, the more I returned to what my interest was to start with, which is building these virtual landscapes and examining how they relate to a physical space.

Now my work also exists more in the film world, or in videogames and different VR productions, both outside of art and inside of it. But it all comes back to building; fabricating large scale virtual spaces. The way I consider an augmented app on a phone, it's not the phone itself but the park, so it's more about connecting something in your hand to the landscape that you are already walking around in. We have heard about architecture that is melting together with the pathways of the landscapes. The way I design exhibitions is the same, it melts into the space and the architecture, and here it's around the lake in the park. Because for me what's interesting working with technology itself is as a tool or pathway to sensing ecosystems in new ways, to transform your senses. So I tried to almost let the technology or the structure – as much as you can, because it's always there – disappear.

HUO: Much of your inspiration comes from outside the art world. In a recent interview (the Louisiana Channel, Louisiana Museum, Denmark) you spoke about the influence of eco-fiction on your work. Which eco-fiction writers are currently inspiring you?

JKS: I am a big fan of Jeff VanderMeer. His writing is really interesting to me, because it's very sensory. For example, Jeff wrote a book called Finch, which is about people made of fungus arising next to humans,

so the craft of the writing, is about smell and slime and touching different things that are otherwise quite abstract to perceive in language. His writing is really interesting to me because it's quite radical in its imagination: new species come into existence and how he is able to stretch his imagination and share that with people in a medium is really interesting to me.

Right now I'm reading *The Fifth Season* by N.K. Jemisin, and that book is also really interesting because she's writing about how the characters are able to perceive seismic activities and influence them, so this too is almost a new way of thinking about humans' relationship with the planet.

My work doesn't intend to suggest how our ecological future might be, it rather suggests that people can imagine new scenarios for landscapes.

Huo: You are a field researcher, known for sometimes camping out for months at a time to gather data for a particular landscape. It would be great to hear about this practice as a field researcher, and maybe also a little more about how you researched the project here.

JKS: To re-imagine something in a specific landscape, something that can be interesting for people to know more about the place they are in, requires a really deep engagement with that place, so that's why I do these long excursions. I talk to biologists, researchers and different people, and then I 'touch the soil' and remix it all.

For this project I worked with the Museum of Natural History in London, with a collection that they have in Tring, north of London. I went there and worked with an ornithologist, to create textures of the different bird species in the park. The ornithologists know the parakeets

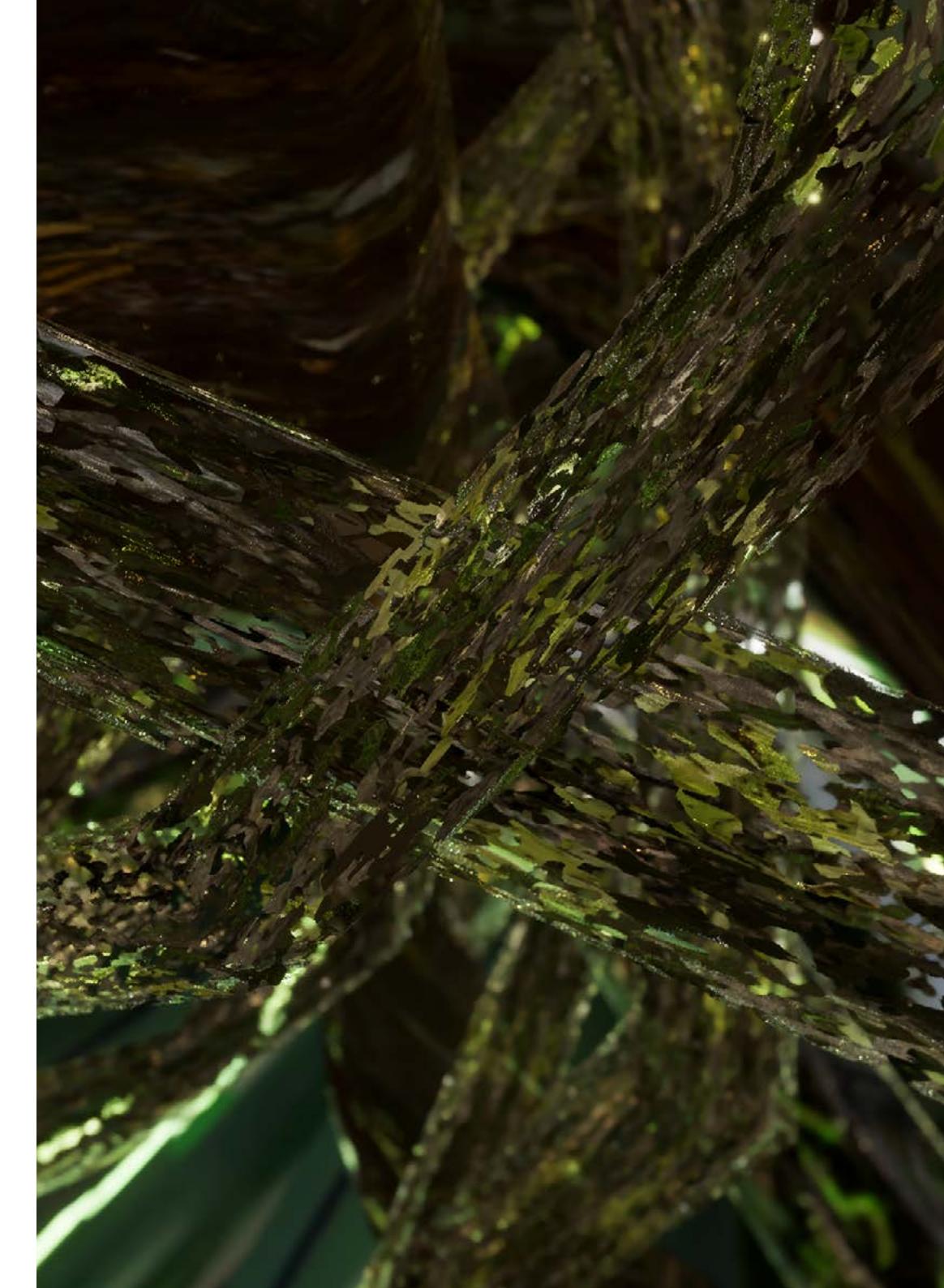
better than I do, and I talked to them about their perspective on this parrot: what is that story, what is that emotion. Is it a kind of excitement, or is it more kind of a fear? Because the parakeet is a colourful bird in the park that many are fascinated by, but it's also invasive and kills smaller birds in the park because it's very territorial, so there are two sides. Similarly, the London plane trees filter the air, but they also create a lot of pollen, so there's also a double story to this tree: it cleans the air, but is also pollutive.

Huo: Your recent projects, including *The Deep Listener*, are connected to extinction. Of course, in the current context of extinction there is also the contentious issue of de-extinction, the practice of artificially bringing back species that have previously been declared extinct. Can you tell us about how the concept of extinction and de-extinction fit into your work?

JKS: Extinction and de-extinction has been a theme of interest for me, for a couple of reasons. One is of course that it's a very urgent, real thing that's quite terrifying, but also because it activates the imagination. Many natural history museums are now digitising their entire collections, so landscapes and historical landmarks are being preserved virtually, because they know that they will disappear. So in 50 years' time there will probably be some species or places that are only accessible digitally. This as a theme is interesting to me.

It's almost like a doomed cause, you try to archive things that are disappearing and then think that you can bring them back to life, which I think is an impossibility.

Conversations I have had with writer Britt Wray over the last couple of years have informed my practice. In her book



Rise of the Necrofauna she interviewed scientists from all over the world who are occupied with bringing extinct species back to life. Her conclusion is that what you create ultimately is a new creature, it's a modification; a mammoth would live in a different ecosystem, so its diet would be different, and therefore it will evolve and live differently to how it did in the past. But humans are still trying to bring this animal back to life, based on fantasy or a feeling of control.

I interviewed Douglas Pratt, an Emeritus Professor of ornithology in North Carolina, for a project. He spent 40 years of his life studying an entire population of birds called the Kaua'i ʻōō that are endemic to a small island in Hawaii, and they became extinct because of a hurricane. But they became extinct because of a hurricane in the 1990s, because there were mosquitoes carrying avian malaria that came to the island in the 1800s. So something that humans did in the 1800s all of a sudden indirectly made a species extinct in the 1990s.

I asked him what it feels like, knowing that he is one of the last people on the planet who can actually create oral narratives of things that are now gone? At the same time, you can still listen to this species' bird calls, as they were recorded by the ornithologist. So you have an archive of things that are only accessible digitally; it's already happened. He also told me that he's an illustrator, so he paints birds, and when he paints them, it's his way of bringing them back to life.

My conversations with Douglas Pratt and Britt Wray involved two years of research and practice. Everything I do returns to immersion and how being in a place informs how I work. It's always in a conversation with someone, or a place, and what kind of imaginations or emotions can

that provoke in people that goes beyond that place itself.

Huo: To mark the 30th anniversary of the World Wide Web, we spoke to Tim Berners-Lee. He lamented the potential loss of net neutrality, saying we need the same World Wide Web for everyone. You make your exhibitions very public, using different platforms from games to the Venice Biennale to introduce often niche ecological perspectives to as wide an audience as possible. Could you please explain this idea?

Jks: Yes. The Kaua'i ʻōō project is an example of that, where it's super niche, this is not a story many people in general in society are aware of.

For this project, I'm working with a type of algae and plant that's in the water, and how different birds and larvae have a shared ecosystem in it. They have started to plant a sort of weed down here in the water to combat algae blooms, to provide these specific larvae and birds with a place where they can lay eggs.

I don't think a lot of people think about the algae and these plants down at the lake here, but through a project like *The Deep Listener* you can introduce people in the park to things in the ecosystem and explain why certain plants and species are there, in a very imaginative and visceral way.

With immersive media like AR, you can heighten the senses, and often new perspectives only happen from advances in technology. The microscope is an example, where you can see things on a scale that your eyes cannot, and through that vision you can learn new things in ways that can be abstract if explained to you rationally. With VR or AR or public installations, you can create a physical space around people's

bodies in which they start to perceive these new perspectives.

Huo: Another notion which pops up in almost all your interviews is that of slowness. In the context of an art institution we could talk of 'slow programming', or when we speak about augmented reality we could discuss the idea of slow technology. Would you expand on this notion of 'slowness'?

Jks: If you work slowly, you have more room to play around, to work without aim, and that is necessary to open up new imaginations, or things that you didn't know before you tried them.

In terms of how things are made, I hope that working over long periods of time I'm able to come to some kind of new perspective on things. But also aesthetically, for example, enhancing textures of a tree so that you can see to a microscopic level, you can find that through a slow engagement with materiality and ecosystems and conversations. On a more personal level, I think it's important that as humans we slow down and not just get absorbed into the big structures around us and become like a collective machine.

And I think a Pavilion like this (Junya Ishigami's 2019 Pavillion Commission) is a great example of something that's really slow: it is elegant and it's not unidirectional. So that kind of spatial orientation also relates to slowness, where it's not based on one predefined path. And that's where AR is especially good for a project like this, where you have an entire park to make an artwork, you can walk in many different directions and just take your time with it.

Huo: Do you still consider video games relevant now that you

are working in many parallel fields, and if so are you currently working on any new games?

Jks: I don't want to say too much about it, but I am trying to plan a video game. There is a whole generation of people who grew up with videogames, so they are becoming more diverse, more artistic and poetic and not just about action and guns. There's a story, there's a project that I want to make, and the work itself is that world and story. Once you've created that, you could illustrate it as a video, as a game, in VR. You could use many different formats and outlets, and that's a strength of virtual production.

I think that's where art and culture production is moving towards. When you say film, video games, art, those are boundaries that I think are slowly dissolving, especially when you look at people who are practicing the mediums very natively.

Huo: What are your unrealised projects?

Jks: There are two different ones. One of them is actually creating a massive creature and infrastructure of sensors; like an AR app, but where everything you see is kind of alive and physically there in space. I'm not entirely sure how, but slowly I'm trying to build the tools to achieve that.

But the more interesting unrealised project that I would really like to do is to go to the deep sea and collect the textures from different species, from things that are so deep in the sea that they are some of the first species on the planet. It would be like time travelling by going into the deep sea.

What I really find interesting with these technologies is again almost creating a tunnel for people's senses. More and more media are spatial and fully immersive. And time, you can slow it down and you can change it.

London Plane Trees



As London plane trees we were made

A modern hybrid species

A biological infrastructure archiving pollutants

Your breathing is connected to us

We are the lungs of London

The London plane tree, which now accounts for over half of the trees in the city, is a product of the post-industrial revolution's clean-up efforts. Plane trees were planted for their ability to act as the lungs of London; they could absorb air pollutants and store them in their bark. The key to this is in the tree's mottled green, grey and tan bark which collects pollutants and sheds continuously in spherical curls and small sheets, revealing fresh white flesh beneath.

John Tradescant was a 17th century botanist and gardener who discovered the new plane tree – likely a hybrid of the Oriental plane tree and the American sycamore – and was the first to realise its potential ability to absorb pollution and withstand root cramping. The tree would not have come

about were it not for colonial expansion and the voracious appetite of botanists, such as John Tradescant, for new species from colonies and territories around the world. The oldest existing living plane trees in London are from around 1660.

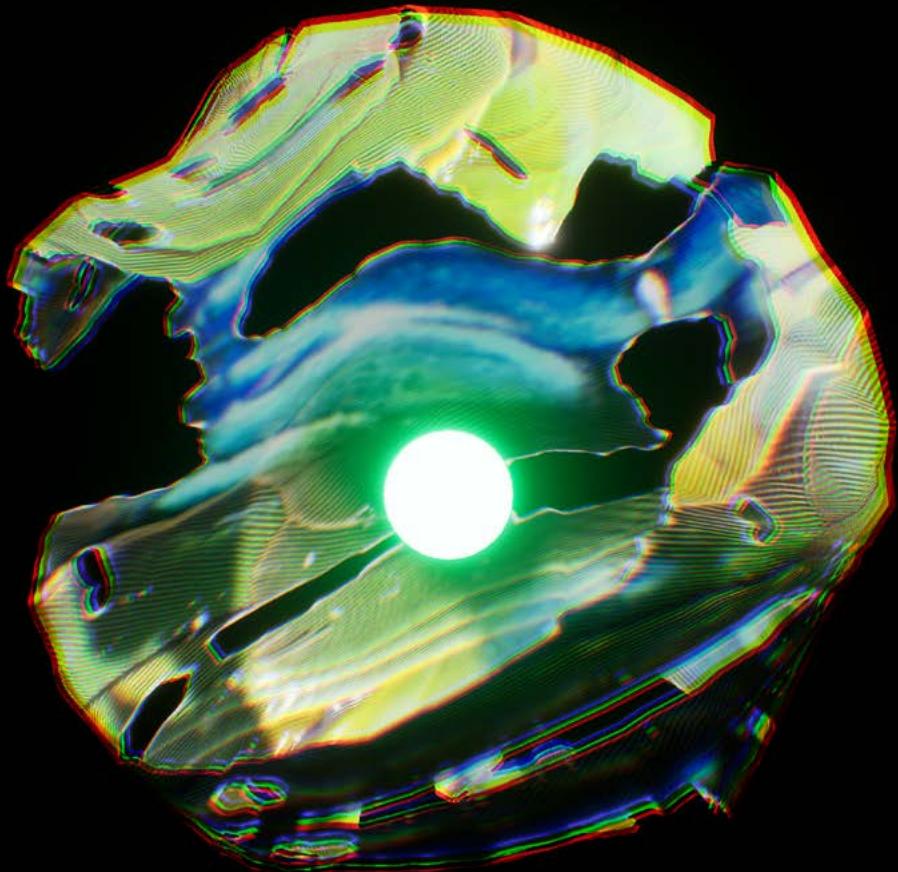
While most tree species in England are connected to mythology, the London plane tree sprouted in a city where it would be revered for its utility, a sign of the times. The London plane would provide city planners with a kind of organic architecture that pulled the city's poison into its own resilient flesh. The London plane tree continues to be popular today, and also provides much needed shelter to high-flying urban dwellers like finches, warblers and some woodpecker species.







Parakeets



We are the flamboyant parakeets
From the skies we patrol the park in pairs
We are exotic prisoners escaped
We use sound to scare off other birds
Some call us invasive

The lush banks of the Serpentine lake in the Royal Parks are host to a large population of feral parakeets, the so-called ring-necked or rose-ringed parakeet. A foreign species to this region, parakeets are the first case of non-native birds causing a negative impact on native populations. While they do not prey on other species, their noisy social behaviour scares smaller animals with whom they compete for food and nesting sites. Academics from Imperial College London, the Zoological Society of London, and the Natural History Museum found that smaller garden birds eat less in the presence of parakeets, and avoid areas where they swarm, allowing the parakeet to slowly edge out more demure species.

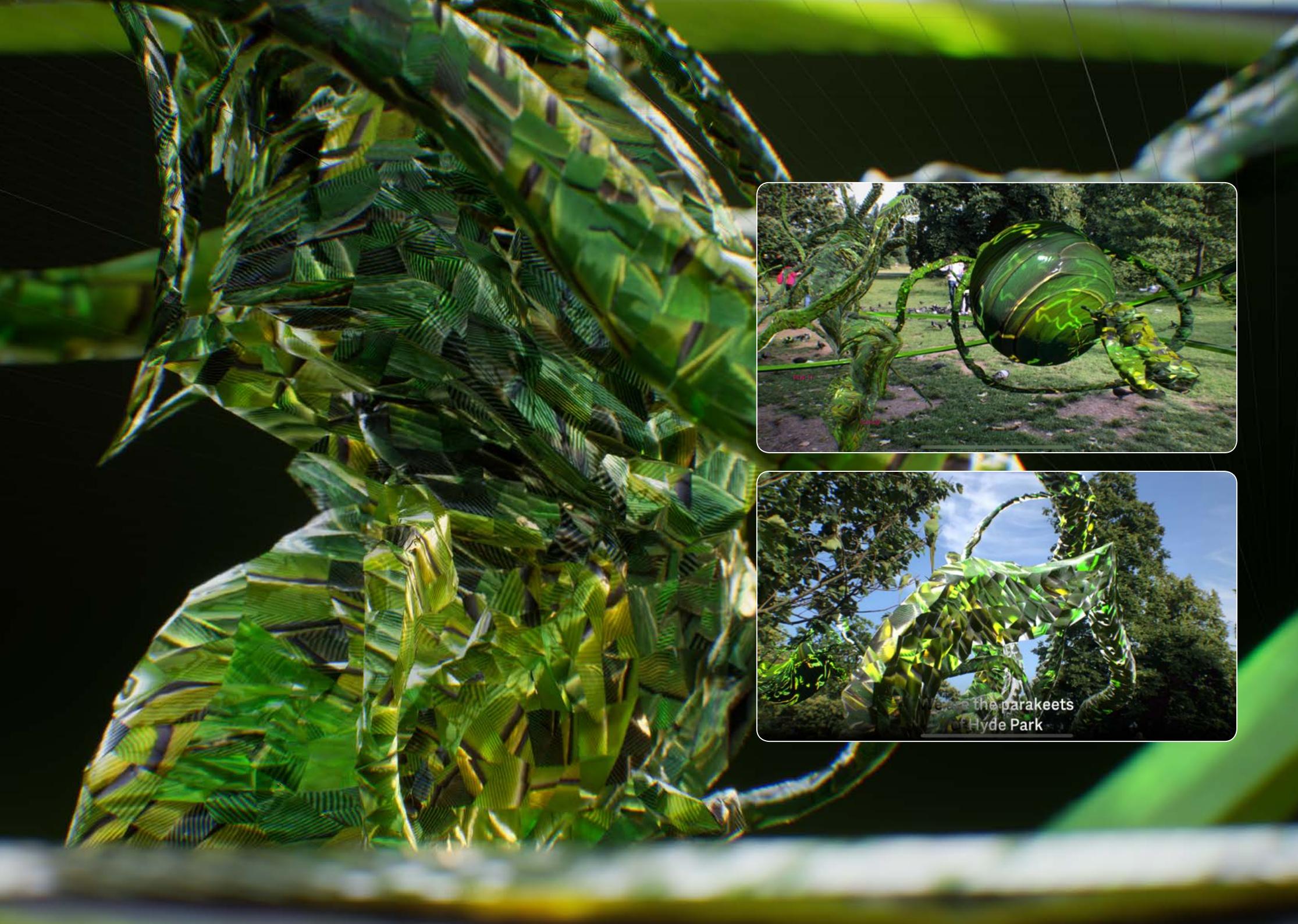
Originating in Europe and Asia, legend has it that they came over to the UK on the set of the film *The African Queen* (1952), and were either released or escaped from the film's West London set once Humphrey Bogart and Katharine Hepburn finished filming in 1951. Others say they were introduced by rock legend Jimi Hendrix, who released a breeding pair on Carnaby Street in the 1960s. While their arrival in the UK is the subject of much debate, these 'invasive dancers' have become a feature of London's skies, roosting in the city's parks and adding to the urban din with their distinctive squawks.

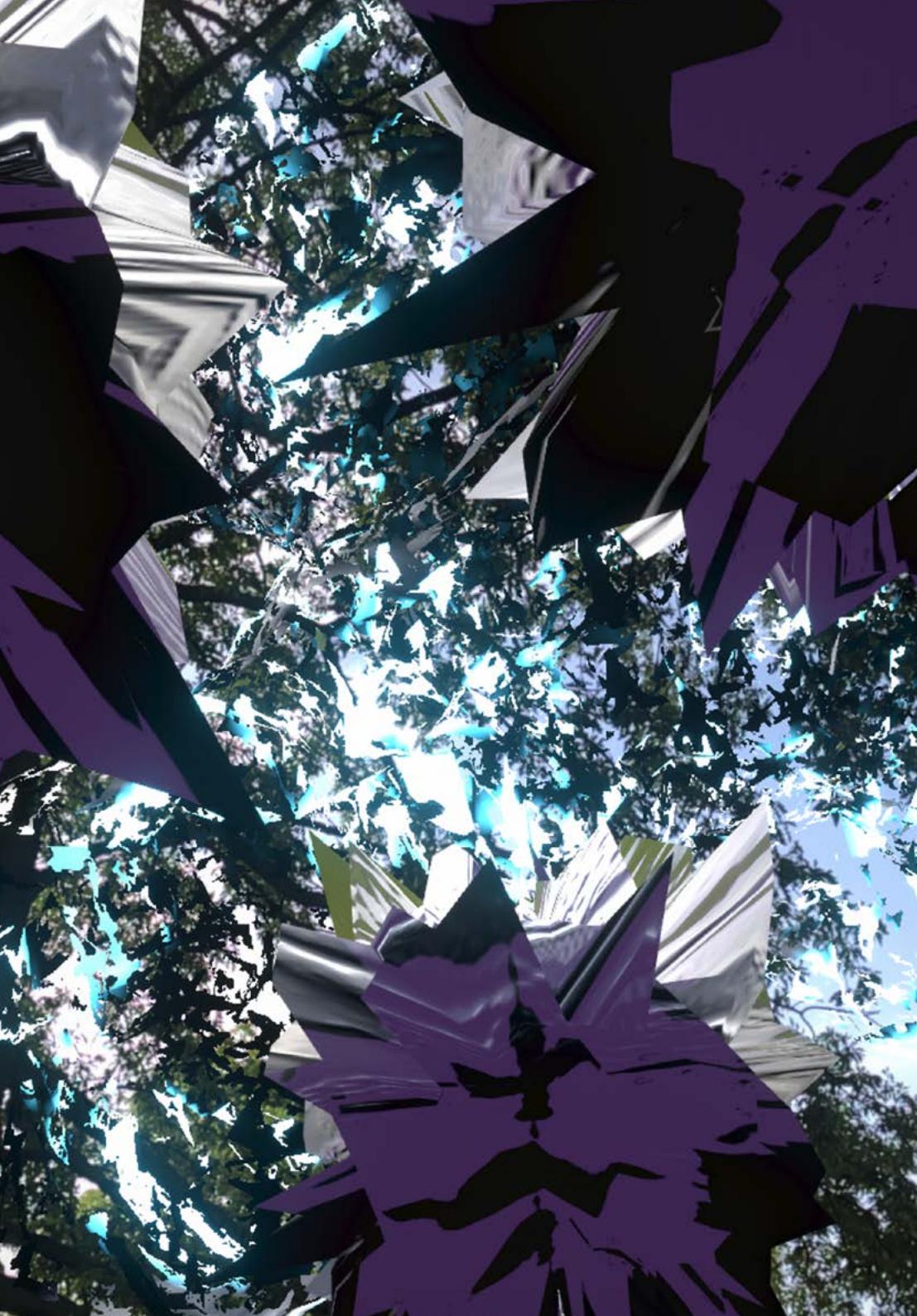


Move around us
and listen...



...love around us
and listen...





Bats

We are the bats of Hyde Park
At night we sing and feast on insects
Our songs echo and ricochet
They touch all living things
Songs shape our world

Found in almost every park in London, bats are highly sophisticated animals whose complex sensory systems grant them heightened spatial awareness. These small creatures also perform a vital role, eating up to 3,000 insects in a night and ridding the city of mosquitoes and midges.

Their ability to navigate in the dark is the result of echolocation, a process by which ultrasonic calls are used to detect objects and prey in their vicinity. First investigated in the 18th century by Italian scientist Lazzaro Spallanzani (1729-1799), today we know that bats echolocate using sounds as effectively as humans use light to see. By sensing the time elapsed between the production of their call and the return of

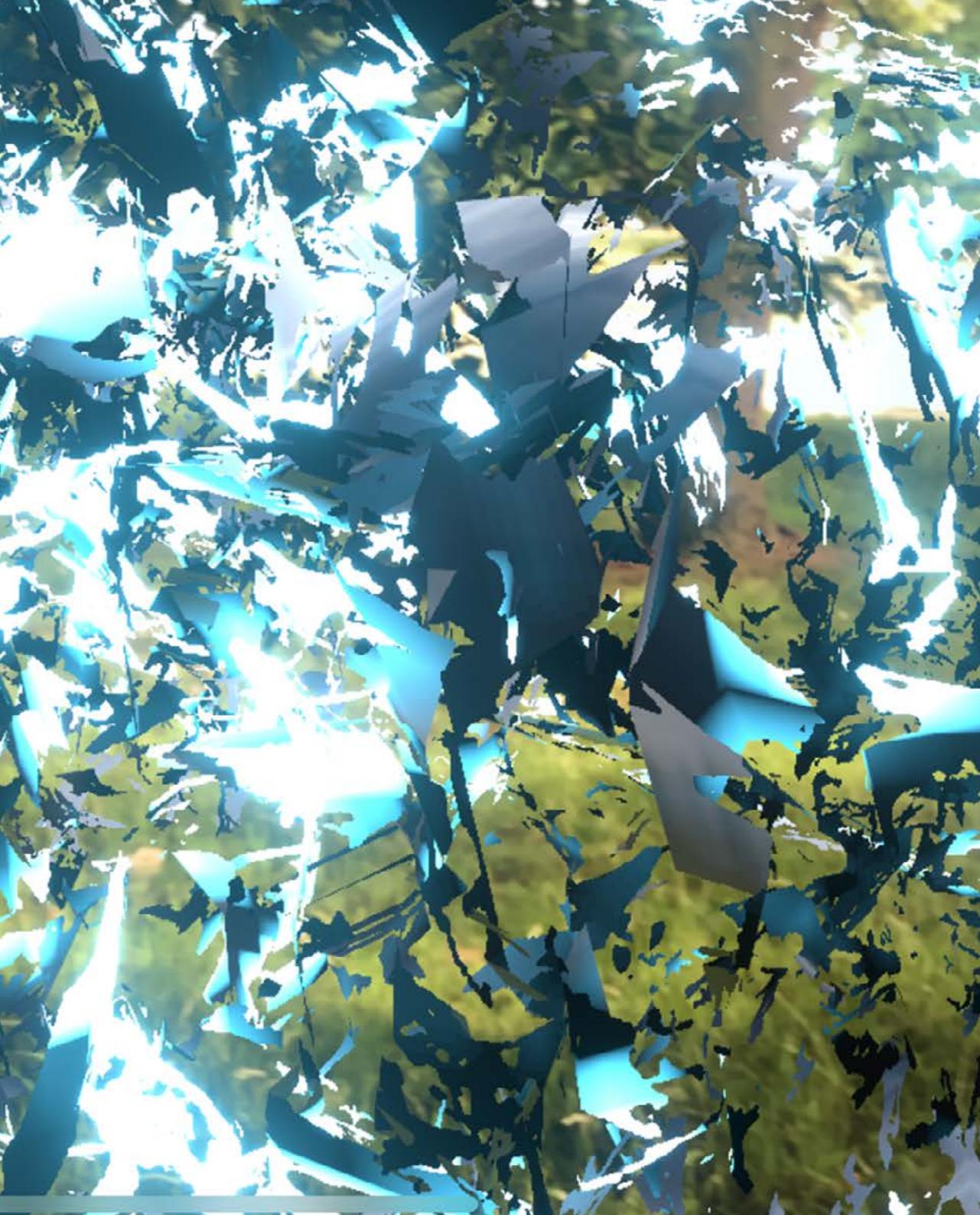
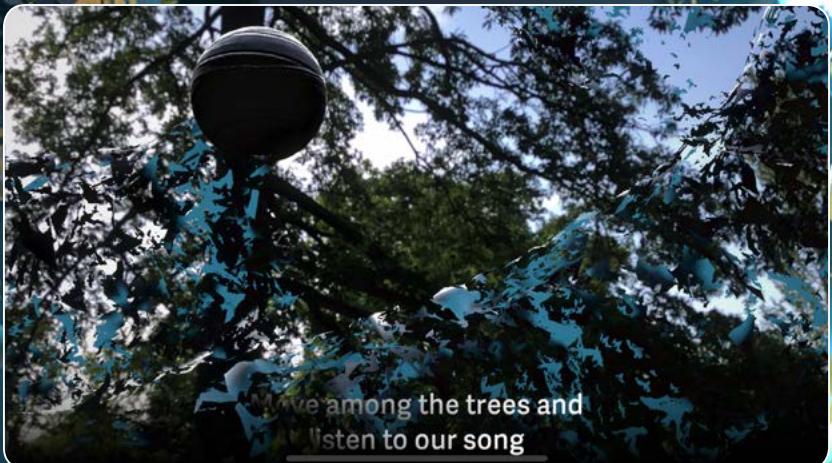
its echo, bats use an evolutionary 'spatial audio' to geolocate themselves and their surroundings by modulating the frequencies of their ultrasonic calls to judge distances and measure the speed of moving targets such as insect prey.

Bats are important bioindicators of the health of their environments and while London's bats are not endangered, their populations are under threat. Habitat loss caused by urban development, the decline of insect species, pesticides, and light pollution that interferes with their delicate sensory systems and made the urban environment increasingly inhospitable to these night-time dwellers.



Love among the trees and
listen to our song





Azure Blue Damselflies

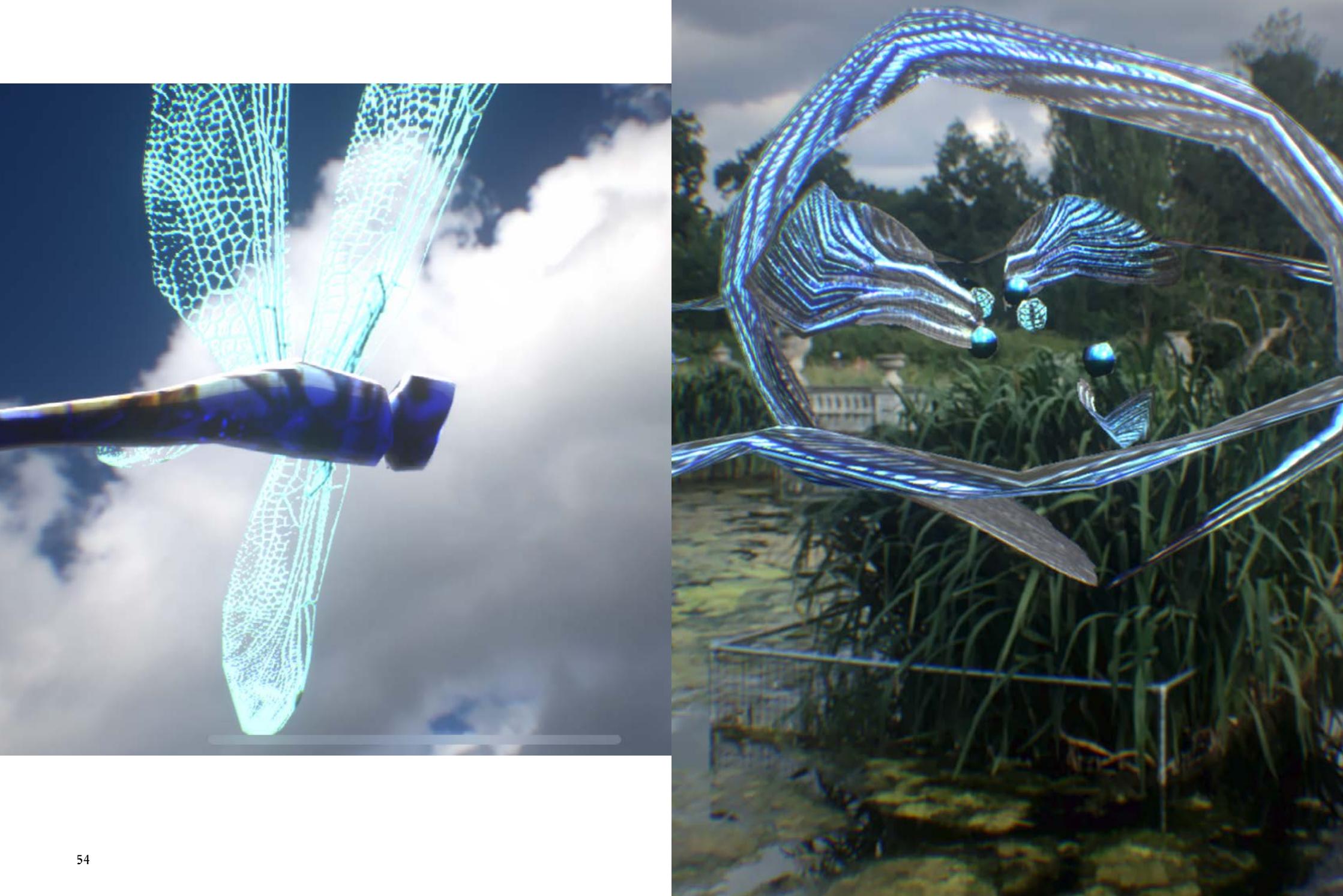


We are made of azure blue damselflies
Through millions of years we have evolved
Into mechanical killer swarms
We are beauties of death
An organic AI

The azure blue damselfly, known for its distinctive black and blue colouring, is an incredibly advanced swarm creature; it is a descendant of the earliest fossil fliers from the late Carboniferous Period (359.2-299 million years ago). A product of hyper-evolution, these insects have perfected their swarming intelligence over 300 million years. As mentioned by media archaeologist Jussi Parikka, insects can be seen as a form of biological artificial intelligence. The musculoskeletal architecture of their wings and compound eyes make them adept aerial predators while their almost mechanised swarming contributes to key phases in their lifecycle, including their emergence from an underwater larval phase to adulthood.

Widespread throughout most of Europe, Scandinavia and the southern Iberian Peninsula, the azure blue, like many dragonfly and damselfly species, spend nearly a year underwater in a larval state. The azure blue favours pond, lake and canal environments with dense vegetation and abundant leaf litter. Though they live for only one year, these insects are key members of park ecosystems and an enduring example of non-human, distributed intelligence.







Reedbeds



We are made of reeds from the water
We live in a marginal, transitional space
We connect land to water
We form a co-habitat with lichens, larvae and moths

Invasive species and human activity have threatened London's living aquatic landscapes of rivers, ponds and lakes. Reedbeds are a vital aquatic environment that protect these water ecologies and support a wide variety of flora and fauna. Curbing the creation of anaerobic mud and the algae blooms that prevent plant growth and turn the urban waterways green.

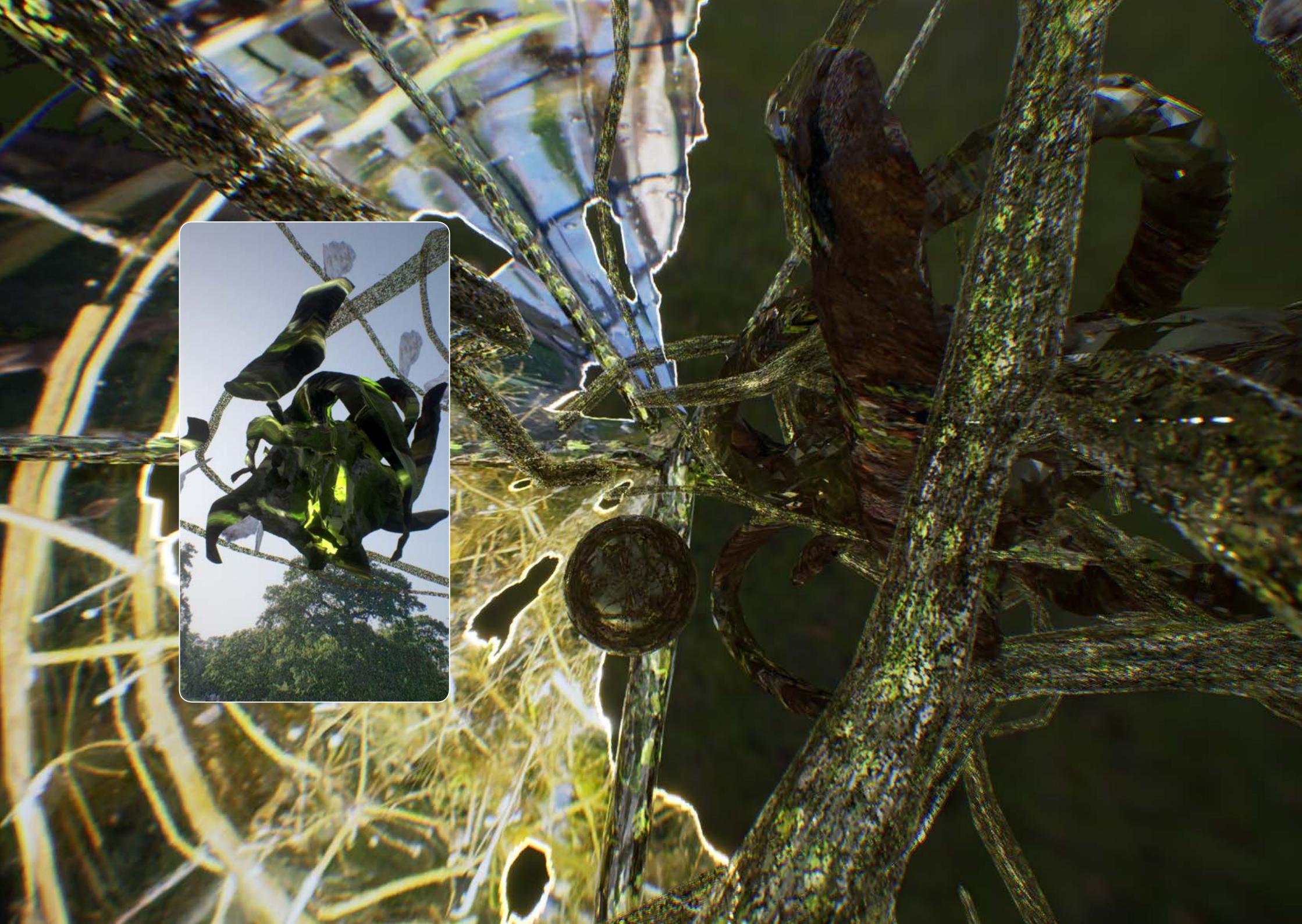
Reedbeds are a liminal point within the park: transitional spaces from terrestrial to aquatic ecosystems. They are naturally scarce and exist at the margins. London's reedbeds have been in serious decline since the 1940s, resulting in up to 40% loss of these habitats between 1945 and 1990.

In the last decade, there has been a concerted effort to replace lost reedbeds to stop the blooming of algae. The reed used is the common reed, a yellow-brown tall-stemmed reed with large, feather-like flower spikes. Reedbeds support a variety of rare wetland plants and are rich in invertebrates. They are also home to a number of bird species, which have become increasingly rare in urban spaces, such as the bearded tit.





Move around us
and listen...



Reality Extended

Jakob Kudsk Steensen and Katharine Vega, artist and researcher at chroma.space in conversation with Ben Vickers, CTO, Serpentine Galleries.

|
EXCERPTED FROM AN INTERVIEW PUBLISHED
IN MOUSSE 60, OCTOBER - NOVEMBER 2017

Is the growing interest in technologies of Virtual Reality still connected to its primary roots in the psychedelic counterculture of the 1960s, pioneered by authors such as Terence McKenna, R.D. Laing, and Timothy Leary? This conversation traces approaches to the re-enchantment of the world and animist perspectives arising from the use of such technologies.

BV: Given that much of this interview will try to unpack the role of virtual reality in MAKING, I wanted to begin by grounding our discussion elsewhere, so that the role of technology might be better understood as a prosthesis to a particular line of thinking and experience of the world, rather than what I believe is too often assumed: that the technological informs the work. To this end, I wanted to start by addressing the subject of animism and what some currently refer to as a re-enchantment of the world. You've both addressed animist ideas and principles in the work you've made. What does animism and these forms of enchantment mean to you?

JKS: For me, there are two ways of thinking about it. One of them is more theoretical and historical, the other is more personal.

When I was a kid, I was sent to this school where we couldn't have toys; we were just outside. So there's a kind of way of just being in the landscape. And then, through that process of sensing something and using your eyes or your body or different tools to reanimate it, you are capturing some... not essence... but some kind of sensual relationship with those things that you observed. Re-assembled. That is my basic approach to animism, and it's the core concept of all the art I do. I approach some place or landscape or history and then very intuitively try to travel through it, even if it's a virtual world. Maybe I start with some kind of concept of process, of place, or some natural organisms. But when I make the piece, it has to be a kind of corporal element, channeling that environment through my body, and that is actually how I move with a camera, outside, when I do research for a

piece. I really believe that there's knowledge in our senses and how we learn to reshape input we get from them into other formats to me is what VR is right now.

The other theoretical aspect of this is inspired by Adorno, who in the *Dialectic of Enlightenment* (1944) writes about animism versus a kind of commercialised approach to making images. He's using the metaphor of putting on a mask, so if you have a culture where someone is putting on a mask or a costume or performing a ritual, they know that it is the same person, but they also sort of believe that he's connected to other elements in the environment at the same time. There's this middle ground of understanding an environment through that cultural activity of animism, and that is absolutely essential for anything I do in my own practice.

KV: I really hear you in respect to the creative process itself being this unfolding, emerging, coming into being of something which is alive itself. It's not all thought out before you embark on the creative. There's something in that which corresponds to how I understand animism. I met Graham Harvey, who had written something called *An Animist Manifesto* (2012), earlier this year. He gives utterance to this idea of the whole of life as something that is sacred and that sense of human bodies being part of this wider thing, part of that which is more than human, a network of life. I grew up in London, and I certainly didn't know that whilst growing up. I had a very English upbringing. I went on a residency in 2013 to a Maori community in New Zealand. And I learnt so much there. It was a big shift for me in understanding the creative process and being in relationship with the rhythms of the earth. You know you have the mountains and human bodies and they are all emanations of the earth that

is held in such an authentic way in that community. When I attended a meeting in the Maori meeting house, you went into it with ceremony and ritual in the creation of a particularly potent space of communication. That meeting space existed to receive what the community needed to hear that would be useful to keeping the health of that community. There wasn't this kind of ego perception of conversation being like an expression of an individual. It was more about just giving space for what needed to be said and this sense of the earth speaking through different people. It just seems so creative and healthy and so much a part of what happens in collaborative creative practice. You know, maybe these things come in dreams, and maybe they come in the little visual impulses we have in a day and the sudden intuition to do something, that sense of living attention. That's what I understand as animism.

BV: You both seem to be attempting to build new practices or rituals for addressing what are rapidly becoming incredibly strange times, engulfed by crisis. But rather than responding in a way that proposes a solution or a direct response, it seems that your works instead act to absorb the impact quietly at a different speed and thereby propose a shift in perspective. Could you respond directly to that reading of your work, as well as the specific role that climate crisis and these types of subjects play in both of your practices?

JKS: I think of my piece called *Terratic Animism* (2017), where I spent a month travelling through all kinds of energy infrastructures in the States and some mountains in Massachusetts. I had this

costume made of mylar, and I was going to these places and filming myself out in this environment. I knew that the main source of interest was a dome from the 1960s, a sculpture that's very iconic for the World's Fair and that was made four years after the first images of earth were made from satellites, some kind of utopian idea of this total technology of the earth and human synthesis. So, as someone who was growing up much later than that, I was very interested in that feeling when my generation looked back at that monument and what it represented. And so my approach to that piece was more like a zeitgeist, a response to this idea of an apocalyptic future of climates in pop culture. In 2016 my animistic approach to this was to construct a costume and travel around this landscape of infrastructures. Then I recreated it and animated it as a big virtual forest: five hundred meters that you're able to walk around in. I think that in that piece, I am referencing streams of thought both from the sixties and the pop culture of these utopian-techno futures that have gone off track. But the way I do [it] is very intuitive... it has to do with materials. I was, like other artists, fascinated by mylar. It is this almost sci-fi reflective material that's used in space suits but also for emergency blankets. Again, it is this idea of animism. It is the shaman with the mask and rituals. He sings like a bird, he's the spirit of the rock. But for me, the world that surrounds me – it's computers, it's cameras, it's Facebook. It's being in constant motion. The camera is never still.

kv: It seems really important, at this moment in 2017, to open up to the creative space of potential. And not [to] be dogmatic or utopian, but it is there in the creative act. Something that I've been trying to do with virtual reality is almost 'retime' people to the phases of the moon, to the planet

itself. There's this project that I've been making called *Of the Spheres*, and I've been doing these mixed reality rituals outside, which have sometimes involved virtual reality. One was made for the eclipse in 2015, in which people had an internal view of the mathematics of an eclipse, of the alignments that happen. And then the VR view opened up into a webcam view, and they were sitting on the beach and able to look up at the sky with the intention that they would then be able to witness the solar eclipse as it happened. So nature itself provides these moments of retiming us beyond our little sphere of experience. And I feel that is something intriguing about virtual reality space, that we can open up to a non-neurotic mode of being. Giving people space to listen to their own senses and perhaps plunge into their own sensory systems in ways that they haven't ever done before. I have no desire to shatter people, and I actually think that many of the virtual reality experiences at the moment are pretty shattering. But to dive into the senses, you don't need virtual reality to do that.

jks: I can align with this perspective. When I made a work like that forest, I'm thinking more analytically about the fall of a utopian dream for this techno-utopian eco-future with humans in total control of a planet, but together with nature as well. That's a dream that felt like it was sort of in crisis. But if we return to animism: in how you animate a leaf, for example, as part of a forest... it's purely sensual. I think a lot about how it moves, and at what kind of speed, and the mist, how does it move, and what kind of atmosphere and feeling does that create? That is *in* the animation itself. You know, that's probably why we see so many YouTube clips of melting ice. That in itself is so simple but has such a strong message and power in it.



kv: There's this giving of attention in the process, the giving of attention to this question of how does a leaf move. Which is a kind of mystical question. And I totally agree with your point that even by going towards that subject, even by foregrounding the natural world: what people bring to the piece, bring to the installation, bring to the performance, it is their own awareness of living at this moment in time, with their sense of a threatened ecosystem all around us.

I'm always trying to take virtual reality outside these days, asking people to participate in a ritual on the land and just exist next to each other. Otherwise it risks becoming a sealed, lifeless, arid bubble, and that does feel quite deathly, it does feel sad, like it threatens living in the world... [sighs]

jks: It sounds like you're very engaged outwards, embracing the people and landscape and everything. But for me, a lot of what I do also has to do with quite extreme months of solitude and this experience of loneliness of being alone in the woods or walking around in the park at night with your own thoughts or memories. It's this sort of loneliness, for me, that really resonates with time spent in front of screens and computers. So tying that kind of virtual loneliness... the imagination that you are actually connecting to the natural world through an animated natural world – it's a kind of fantasy. For myself at least, that is a really key element of how I work. It's also the memories and imaginations that are evoked by different landscapes or the idea of stereotypical landscapes.

kv: That's so interesting. I've been reading Char Davies, who is one of the first artists to have worked with virtual reality in the 1990s, and I was also reading Michael Heim's *The Metaphysics of Virtual Reality* (1993). And both of them start their pieces of writing by talking about the landscape that

is in front of their computers as they write. To make that space, it feels like there is something deeply solitary about it.

sv: **In these early stages of the development of virtual reality, there was a direct drive towards expansion of consciousness. Yet in this moment the virtual reality experience we encounter rarely recognises that history or even remembers it. Do you think that virtual reality still has the potential to be disruptive in the way described by the earlier counterculture or offer any type of 'special training'?**

jks: For me personally, if I didn't believe that, I wouldn't make VR, because those thinkers are deeply inspiring to me. And also another artist, John Whitney – he made a piece in the sixties which was also one of the first virtually animated images. And, you know, his entire thing was animistic. This kind of tribal rhythm of geometry. I attended a talk at Tribeca Film Festival where he Skyped in and explained that he thought that the technological limitations they were operating under made it so their philosophy and thinking around why they did it was much more important. The philosophy of VR was strong also with someone like Terence McKenna, who is also someone I really like to read and listen to when I work.

For me, VR is interesting because I can make a world and then, through these animistic practices, that world is composed entirely of things and choices from my intuitive response to specific places and histories. I believe that, at least in my own work, there must be some kind of knowledge inherent in that which can maybe expand how you perceive or think about a landscape. One work I've made is a replica of an entire island, four by four kilometers,

made entirely of other people's images and satellite images and info-graphics from different scientific studies. I take all those images and look at them in the context they come from: tourist photographs of the island, which is Bora Bora, and all the natives who work at the resorts, working for these French companies, and these resorts who made this post, and then you have all these people who are very emotionally responding to that image. There are literally hundreds of posted comments for these images, where some people get really angry on the ethics of tourism, and others that say it doesn't really matter, and then there's some kind of emotional fantasy of what that entire landscape is. I think that animism as an expansion of consciousness versus making an experience which is purely narrative-based, they're opposites, and they are not really being made in the same space.

kv: I totally agree that I wouldn't be using VR unless I thought that there was a potential for a radically different kind of communication and opportunity to share embodied knowledge that is really held by people on earth and lots of different cultures. The kind of knowledge that they hold has not really been given as much emphasis. This kind of knowledge is so much to do with the glue that holds everything together, that glue which keeps community together and keeps humans evolving in a healthy, creative way.

One of the things I'm really fascinated by is the interest in-group dynamics: somebody like R. D. Laing, who wrote about relational psychology – the understanding of how projections work within clusters of people – perhaps we didn't have a way to really look at that before.



THE DEEP LISTENER
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THE DEEP LISTENER

Augmented reality application for iOS and Android devices

Serpentine Augmented Architecture is commissioned in collaboration with Google Arts & Culture and Sir David Adjaye OBE

App production and development by the Serpentine Galleries with:

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ALL FIELD RECORDINGS BY MATT MCCORKLE EXCEPT

Bat field recordings from Dr Veronica Zamora-Gutierrez

Additional parakeet field recordings courtesy Cornell Lab of Ornithology and the Macaulay

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Narration recorded and engineered by Sam Bardsley at Glas Hour Studio, Berlin.

All images by Jakob Kudsk Steensen

Parakeet specimen images courtesy Natural History Museum, London

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