

DREAMACHINE

PRESS KIT

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Biographies

Jennifer Crook

Jennifer Crook has led critically acclaimed public projects for festivals and arts organisations around the world, including Artichoke, 14-18 NOW and the London 2012 Festival. She has nearly two decades' experience creating ambitious and award-winning interdisciplinary commissions in a diverse range of locations, from rooftops to pavements, clifftops to forest floors, collaborating with artists including Olafur Eliasson, Danny Boyle, Christo and Jeanne-Claude, and Jeremy Deller. Her passion is to create memorable participatory events that show the very real potential for art to create change.

Jennifer conceived the idea for Dreamachine and built the team to bring it to life. She is overseeing the creative vision, direction and management of the Dreamachine programme.

Assemble

Assemble is an interdisciplinary collective, working across architecture, design and art. Its diverse work transcends traditional boundaries between architectural, social and artistic practice. With a hands-on approach and focus on making, over the last ten years the collective has worked with a number of collaborators to deliver projects across a range of scales from experimental research and performances to furniture design, housing, theatres and art galleries, all of which weave collective, unexpected or transformative moments into everyday life in the city.

Assemble is responsible for the spatial design and audience journey through the Dreamachine live experience.

Jon Hopkins

Jon Hopkins is an award-winning electronic artist, producer and composer, cited by The New Yorker as "one of the most celebrated electronic musicians of his generation". Internationally renowned for both his solo work and his collaborations, Jon has performed sold-out live shows and festival dates around the world - from prestigious venues such as the Sydney Opera House and the Royal Albert Hall, to major festivals including Glastonbury, Roskilde, Sonar and Coachella. His Grammy-nominated fifth solo album, Singularity, reached Top 10 in the UK Charts and his latest album 'Music for Psychedelic Therapy' was released to critical acclaim in late 2021. Jon has forged a reputation for music that marries the dance floor with the devotional – with visceral live performances.

Jon has composed the score for the live experience of Dreamachine to lead the audience journey.

Professor Anil Seth

Professor Anil Seth is a neuroscientist, author, and public speaker who has pioneered research into the brain basis of consciousness for more than twenty years. He is a Professor of Neuroscience at the University of Sussex, Co-Director of the Canadian Institute for Advanced Research Program on Brain, Mind and Consciousness, a European Research Council Advanced Investigator, and Editor-in-Chief of the academic journal Neuroscience of Consciousness. He has published more than 180 research papers and is recognized by Web of Science as being in the top 1% of researchers in his field in the world. His 2017 TED talk has been viewed more than twelve million times, and his book Being You: A New Science of Consciousness was an instant Sunday Times Bestseller and a 2021 Book of the Year for The Economist, The New Statesman, Bloomberg Business, The Guardian, The Financial Times and elsewhere.
www.anilseth.com, @anilkseth

Dr. David Schwartzman

Dr David Schwartzman is a Senior Post-Doctoral Research Fellow at the Centre for Consciousness Science. He is a cognitive neuroscientist, whose research investigates the neural basis of altered states of consciousness. His PhD specialised in the analysis of electrical signals from the brain using EEG and investigated the functional role of high frequency brain activity (gamma oscillations) in visual perception.

Professor Fiona Macpherson

Fiona Macpherson FRSE, MAE, is Professor of Philosophy at the University of Glasgow, and Director of the Centre for the Study of Perceptual Experience (CSPE). She is president of the British Philosophical Association, a trustee of the Kennedy Memorial Trust, and a member of Arts and Humanities Research Council and the UK Research and Innovation Creative Industries Advisory Group. Her research concerns the philosophical nature of consciousness, perception, illusion, hallucination, imagination, and technological interventions on the senses including VR and AR.

Dev Joshi

Dev Joshi is an award-winning designer and technologist with over a decade of experience working across design, engineering, innovation and the arts. He was the technologist behind the Barbican's sell our Rain Room exhibition in 2012 and has delivered projects for public institutions around the world, always at the forefront of art and technology. As Associate Director at Random International, Dev led the development and delivery of large scale physical and digital experiences, working with a wide variety of practitioners, from Max Richter to Wayne McGregor.

Dev is responsible for delivering the technology behind the live Dreamachine experience and overseeing the delivery of the digital elements of the programme.

Christopher Shutt

Christopher Shutt is a multi-award-winning freelance Sound Designer working in many disciplines and contexts all over the world. He was formerly Head of Sound at the Bristol Old Vic, the Royal Court and the National Theatre, and worked on ground-breaking productions for *Complicité* for over 20 years, receiving a Tony Award for *War Horse* among others. He is internationally renowned for creating worlds through sound that transport audiences.

Chris is supporting Jon Hopkins with the integration of his composition into the live experience.

Holition – Creative Technology Studio

Holition is an award-winning digital innovation studio. Part think-tank, part digital studio, they are a synthesis of scientists, film-makers, artists, mathematicians, UX designers, technologists and other curious minds applying their cross-discipline knowledge to deliver innovation.

Holition are developing the digital elements of the live experience and the innovative online platform connecting audience experiences across the world, working closely with the scientific research team.

A New Direction

A New Direction is an award-winning non-profit organisation working to enhance the capacity and agency of children and young people in London to own their creativity, shape culture, and achieve their creative potential.

A New Direction are developing the schools programme in partnership with the British Science Association and UNICEF UK.

Quotes

“Dreamachine will engage audiences across ages and cultures in a powerful new kind of collective experience. The rich kaleidoscopic world of the Dreamachine will come from within, providing a magical insight into the extraordinary potential of your own mind. Beyond the confines of screens or devices, our programme will creatively explore the most fundamental of human connections: how we perceive and make sense of the world around us. To explore one of the greatest remaining mysteries to humankind ... all you need to do is to close your eyes.”

Jennifer Crook

“We are excited to be the spatial designers for Dreamachine; working collaboratively as part of a multidisciplinary team which explores the boundaries of more conventional forms of design. The Dreamachine experience is unique in that it is highly personal and yet experienced in a group setting. It is not very often that people will come to a public setting and have such a deeply personal moment that is shared with strangers. We were influenced by a number of references when approaching the design, from art and sculpture to ceremonial and ritual spaces. However, large-scale prototypes were key to creating the final space, and the design process happened in response to the feedback we had from the general public during workshops, which is a very reactive way of working. Participants are sat facing each other in a circle; the architecture tactile yet almost invisible allowing people to fully relax and have the most profound experience possible.”

Assemble

“I've found it so inspiring to be involved in Dreamachine, and work with this incredible team. It is not often you get to say you are working on a genuinely new type of artwork. I've always been fascinated by the relationship between music and consciousness, and its ability to unlock the infinitely rich imagery that we hold in our subconscious. Dreamachine is also an incredible immersive audio experience - with an array of 86 speakers to play with, I was able to compose in a whole new way, moving sounds around within a true 3d space. It was like creating a kind of sonic palace. I wanted the music to be grounding and to feel like a safe, warm space to hold people as they embark on this powerful experience, both alone and collectively.”

Jon Hopkins

“One aspect of the Dreamachine project that has been particularly rewarding is that the science and philosophy have been built into the project from the very beginning – it's a true collaboration across disciplines. As an experience for participants, it's going to be enormously impactful. We have become so used to being passive consumers of culture and of information, and the content we consume is becoming ever more tightly curated. Dreamachine is completely unique that each participant generates their own perceptual world - their own individual inner universe. People will experience, for themselves, the power and potential of their own minds, and we researchers have an unprecedented opportunity to learn about how people perceive the world differently. We hope that the experiences revealed by the Dreamachine, the Perception Census: the first major citizen science study into perceptual diversity, and our exciting schools programme, will kindle the curiosity of new generations and audiences across the UK.”

Professor Anil Seth

“In my field of work I think about the nature of perception and illusion everyday. It has been great to employ my knowledge of these phenomena in collaborating with the artists, musicians, designers and scientists that make up the Dreamachine team. I hope that the Dreamachine experience will make people think about the extraordinary power of their own minds and appreciate the truly puzzling nature of our consciousness.”

Professor Fiona Macpherson

“Holition is very proud to have been selected as a collaborator in this groundbreaking project that celebrates and explores the fundamental aspects of human experience that we as a creative innovation

studio have always been passionate about. Holition has always approached consumer experiences in a very human-centric manner, with the primary aim of highlighting the symbiotic relationship between human experience and technology, and the tools that we have built inside the Dreamachine do exactly that. Dreamachine is a space where every individual can learn more about themselves. Through introspection and reflection, we are able to peer into our minds, our thoughts about ourselves and the world around us. What's fascinating about this project is its ability to act as a catalyst in bringing humans together. By looking inward and recognising our unique individual experiences, our hope is that each person who goes through the Dreamachine will leave feeling inspired, and with a deeper appreciation and understanding of their individual selves"

Jonathan Chippindale, Co-Founder & CEO, Holition

"UNBOXED began with a UK-wide call for creative teams from across science, technology, engineering, arts and maths, to propose extraordinary and original major public participation projects. We could not have predicted that we would be presented with Dreamachine, a project that seamlessly blends art and neuroscience to offer an awe-inspiring and truly unique experience for audiences as well as enhance scientific research in areas at the frontier of human understanding. We hope one of many welcome and surprising legacies that we will see across our ambitious programme in 2022 and beyond."

Martin Green

Brion Gysin

Brion Gysin (1916 - 1986) was an artist, writer and inventor. He was born in the UK to Canadian parents and spent his childhood in Canada before being sent to school in Somerset aged 15.

Gysin studied at the Sorbonne, where he was introduced to Surrealist circles. He served in the Second World War, before moving to Morocco where he met American novelist and artist William S Burroughs. The two become lifelong friends and collaborators.

Gysin and Burroughs experimented with the cut-up technique, in which words and phrases were literally cut-up and rearranged to reveal new meanings. It culminated in *The Third Mind*, a manifesto on the practice. Gysin transferred this technique to tape-recorded poems altered using a computer algorithm, making him one of the earliest artists to use computers in creating his art.

In 1959 Gysin developed the Dreamachine. The creation saw a cylinder with slits fixed around a suspended lightbulb was placed on a record turntable. As it rotated it projected light at a frequency that corresponds to waves present in the brain during relaxation, creating a kaleidoscopic, technicolour experience inside the mind of the viewer. Designed to be the 'first artwork to be experienced with your eyes closed', Gysin had a vision for his invention to replace the TV in every home in America. Instead of passive consumers of mass-produced media, viewers of the Dreamachine would create their own cinematic experiences.

The dreamachine was the culmination of Gysin's research. It was unveiled in 1962 at the Musée des Arts Decoratifs in Paris.

Throughout the 60s, 70s and 80s Gysin would inspire and mentor a range of artists, poets and musicians including David Bowie and Patti Smith.

Scientific Research

The use of flickering light to create vivid visual experiences can be traced as far back as ancient civilisations, when communities would congregate around campfires and peer into the shimmers. Today, the phenomenon is known to researchers as ‘stroboscopically induced visual hallucinations’ – and this provides the scientific foundation for the Dreamachine project.

The academic team for Dreamachine – which is made up of neuroscientists, psychologists, and philosophers – has been built into the project from the very beginning, and will continue to build on the legacy of the project. The team is based across the Universities of Sussex and Glasgow, with the core team anchoring a growing network of collaborators across the country and throughout the world. At Sussex, the team is led by Professor Anil Seth, a neuroscientist who is recognised as one of the world’s leading researchers into consciousness and perception (and author of the recent bestselling book *Being You – A New Science of Consciousness*). At Sussex, Professor Seth works with Dr. David Schwartzman and Dr. Reny Baykova, postdoctoral research fellows who are leading specific aspects of the wider project. Professor Fiona Macpherson – director of the Centre for the Study of Perceptual Experience at the University of Glasgow, and a renowned philosopher – has been involved every step of the way, helping the Dreamachine team design the experiences and guide the research projects through their many stages.

Science and philosophy are deeply woven into many areas of the project. The primary phenomenon – the rich inner experiences created by the Dreamachine – involves our brain activity matching the frequency of the flickering light. The discovery was first made by the pioneering British neuroscientist Dr Grey Walter in the 1950s. In his revolutionary book ‘The Living Brain’, Walter observed that states of consciousness could be dramatically affected by flickering light on closed eyes, and that this effect did not merely impact those areas of the brain associated with vision, but the entire cerebral cortex. Walter’s discovery was then followed by Brion Gysin’s original 1959 Dreamachine, which provided the creative spark for the current project.

The scientific team has been investigating these illusions and visual experiences for many years, and continue to study precisely how and why they arise. At Sussex, the team is investigating the idea that flickering lights impose a ‘beat’ on the rhythms of brain, similar to the ‘alpha’ rhythm – a brain state normally associated with relaxation.

For the Dreamachine experience, the scientific team helped design and optimise the lighting sequences, and helped ensure that the experience is as enjoyable and widely accessible as possible. Working with the creative technology studio Holition, they have also developed an engaging interactive tool which visitors will find in the reflection area of the experience. The Sensory Tool guides visitors through a series of reflections on their experience, covering what they perceived (colours, shapes, movement and so on), as well as what they thought, what they felt, and deeper questions such as the perceived passing of time and sense of place and space. This tool has been developed both to give visitors a deeper insight into their experiences, and to shed light on how and why people have such different, distinctly individual, Dreamachine journeys.

A key research theme throughout the Dreamachine is ‘perceptual diversity’. We are all familiar with externally visible diversity, for example in terms of height, skin colour, but much less is known about how our perceptual experiences differ from each other. Audience responses from the Dreamachine will shed new light on this question, and the scientific team have developed what aims to be the world’s largest ever citizen science research study into perceptual diversity – the Perception Census – which will be available online to everyone, whether they have taken part in the Dreamachine experience, or not.

The Perception Census is an unprecedented scientific attempt to map out the diversity of our perceptual experiences. As with any census, scientists can only get a good picture of what is going on, if a large number of people take part - far more than in an average psychology experiment run in a University department. This is truly *citizen science*, because by taking part in the perception census people will be

making a real contribution to the science and philosophy of perception, generating knowledge of significant value. In taking part, people will have the chance to learn more about how their minds and brains actively create their experiences; they'll learn that perception is not just a passive registration of an external reality, but an active, distinctively personal, process - and they'll learn something about how their specific ways of perceiving relate to others. Importantly, there's no sense of 'good' or 'bad', of 'better' or 'worse' - there's just diversity, difference, and in this diversity lies a rich potential to understand ourselves and each other much better.

The same core idea of perception being an active, individual process flows through to the Dreamachine Schools Programme - a set of resources and activities for teachers and children at late primary and early secondary levels. The programme matches this core idea to the theme of wellbeing. By understanding our perceptions and our emotions as coming from within, as differing over time, and differing between each of us, the programme will help children to relate better to their own daily experiences and to others around them.

Further resources:

Being You – A New Science of Consciousness, Anil Seth, Faber, 2021. <https://www.anilseth.com/being-you/>

Anil Seth's TED talk:

https://www.ted.com/talks/anil_seth_your_brain_hallucinates_your_conscious_reality?language=en

The Centre for the Study of Perceptual Experience: <https://www.gla.ac.uk/research/az/cspe/>

Technical Design

As the experience takes place in a space that we cannot directly observe (inside the mind of the participant), great effort was placed into the creation of the tools required to record and interpret their reports of what they saw, heard and felt. The deeply personal and often metaphorical nature of their accounts made this challenging and this process was as much about asking better questions as it was about developing innovative solutions to technical challenges.

The team developed custom lighting and control systems, methods for collecting real-time audience feedback and workflows for rapidly changing and evaluating how adjustments to the 'show' impacted the overall composite Dreamachine experience. Given that small changes often have a significant impact on how the Dreamachine can make participants feel, the development cycle quickly became a tight feedback loop centred around focus groups. Thousands of volunteers came to give their insights on the experience as it was developed without whom this would have been impossible. This feedback overlaps with other parts of the project ensuring tight integration with the digital work Holition has done as well as activities for schools and the wider public which are hosted online.

Ultimately the Dreamachine experience is delivered using standard, readily available lighting, sound and control equipment and succeeded in its original goal of being deployed using technology that already exists. Throughout the development and delivery of the project, the team has made use of these building blocks in novel and interesting ways in order to achieve our goals, borrowing practices and techniques from adjacent industries.

The Reflection Space

Through rounds of ideation, prototyping and user testing, design agency Holition has developed a programme that has culminated in three core interactions to enhance the visitors journey through Dreamachine: The Sensorial Tool, Analogue Draw station and a live generative Data Visualisation.

The sensorial tool is a series of questions and interactions developed in collaboration with scientists to collect integral scientific data while providing the audience with a private, engaging place for introspection and reflection. The tool is a central element of the reflective journey - completed on a handheld tablet device in the reflection space only. With a unique visual language and highly engaging series of interactions, the Sensorial Tool joins robust research content with a beautiful User Interface. Inviting the audience to reflect on what they saw, thought, felt and heard - culminating in a completely unique digital takeaway - a Sensory Profile which encapsulates their experience.

The Analogue Draw station captures the audience's sense of expression and communication - encouraging individuals to create a physical piece of art or writing and to digitally capture that within the space. These drawings are then shared out into the space for the audience to enjoy during their visit, and shared out to the wider audience via the dreamachine.world website.

Extrapolating the data from the Sensorial Tool, Holition is also producing a generative data visualisation, which juxtaposes individual experiences against a collective and bridges the gap between the digital tools and physical space. This area of the Dreamachine will allow users to see the wider narrative around the experience through a constantly evolving artwork that links both art and science. Updating live in the reflection space - the visualisation is constantly changing and evolving, so that it will never be exactly the same each time you view it. This is at once the cornerstone of the Reflection Space as well as the visual legacy of Dreamachine, growing and evolving with each individual participant.

Holition is also an acting consultant on the Perception Census, advising on methods and gamification strategies to further enhance the user experience by looking at the individual experience vis-a-vis the social aspect of the experience to encourage further participation and introspection.

Dreamachine Schools

Dreamachine Schools is a major free education programme for schools across all four UK nations, developed by A New Direction in partnership with the British Science Association, UNICEF UK and We The Curious.

Fusing science with arts, the themes of Dreamachine offer compelling classroom investigation: the power of the human mind, our amazing brains and the big questions of perception and consciousness - our sense of self, how we see the world and how we connect with others.

The learning programme offers a variety of exciting ways for schools to engage with the ideas, themes and possibilities of Dreamachine, including:

- 30 accredited lesson plans in Science, Global Citizenship, and PSHE / Health & Wellbeing, linked to curricula across England, Scotland, Wales and Northern Ireland;
- teacher professional development focused on personal wellbeing and mental health in collaboration with the Chartered College of Teaching and the Education Support Partnership;
- a nation-wide join-in moment with Life's Big Questions - an interactive children's survey asking big scientific and philosophical questions rooted in the UN Convention on the Rights of the Child about how we experience the world and why our senses aren't as simple as they seem. Hosted by Martin Dougan (CBBC Newsround) alongside globally renowned scientists and philosophers, exciting science investigations and mind-boggling illusions will inspire intrigue in the classroom and reveal the amazing potential of the human brain.

Venues & Partners

Premiering in London, Dreamachine will transform the Grade II listed Woolwich Public Market. Located on a busy high street, the Market was built in 1931 and is the earliest known example of a Lamella roof to survive in England. It has been dormant since 2018, so the presentation of Dreamachine will reawaken the space and provide the public with an opportunity to reconnect with this historic building in the heart of the town centre, ahead of the future regeneration of the area.

In Belfast, participants can experience Dreamachine at the former church, Carlisle Memorial Church, one of the city's most striking buildings, which has served as a gateway to North Belfast since 1875. After ceasing to be a place of worship in the 1980s, the church fell into disrepair before a major campaign in 2008 to secure its regeneration. This summer, Dreamachine will revitalise the venue and contribute to the return of the building as a vibrant and shared community space.

In Cardiff, Dreamachine will travel to the Temple of Peace, a building designed to 'change the world'. A fitting space for current times, it was built in the wake of the First World War, designed to be a place of inspiration, actively furthering the causes of international peace. The experience will live within this magnificent Art Deco civic temple, providing audiences with a unique and poignant setting for internal reflection.

The final presentation will see Dreamachine reimagine Murrayfield Ice Rink in Edinburgh, transforming the Art Deco space after it was recently forced to close its doors due to Covid-19. Built in 1938, it has been home to one of the world's most popular ice rinks, providing a central hub of entertainment and events for generations of locals.

The venues have been secured with support from Wales Centre for International Affairs, Royal Borough of Greenwich, Woolwich Exchange, Belfast Buildings Trust.

NI Science Festival

NI Science Festival is held annually and offers a range of events which focus on science, technology, engineering, art and mathematics. These events platform the research of leading scientists and thinkers from Northern Ireland and beyond.

Cardiff Council

Cardiff Council presides over 29 electoral wards and provides funding, support and advocacy to develop arts projects across the city, with the aim to increase community engagement and participation.

The Culture, Venues, Tourism & Events Team facilitate the production of large events, working directly with organising partners to deliver projects in and around the city.

Cardiff is the first city in Wales to participate in the UK committee for UNICEF (UNICEF UK)'s national [Child Friendly Cities](#) and Communities initiative. Our ambition is for Cardiff to be recognised as a Child Friendly City (CFC): a city with children and young people at its heart, where the rights of children and young people are respected by all, a great place to grow up.

This project will provide an opportunity for children and young people in Cardiff to participate in a fully immersive experience which will inspire questions, boost creativity and provide hours of fun.

Edinburgh Science

Edinburgh Science is an educational charity founded in 1989, most famed for delivering Edinburgh's annual Science Festival – the world's first and replicated the world over. They also deliver a year-long programme of school and community-based events which inspire, encourage and challenge people of all ages and backgrounds to explore the world of Science, Technology, Engineering and Maths.

Edinburgh International Festival

Edinburgh International Festival is the world's leading performing arts festival, featuring the finest performers from the worlds of dance, opera, music and theatre.

Created in 1947 to celebrate the enduring human spirit following the adversity of war, the International Festival serves as an annual cultural exchange for three weeks every August. This year the International Festival celebrates its 75th Anniversary and will take place from 5-28 August 2022.

Woolwich Works

Woolwich Works is London's newest multi-disciplinary cultural hub on the Royal Arsenal in Woolwich. The landmark venue opened its doors in September 2021 after a multi-million-pound restoration project by the Royal Borough of Greenwich and has already been named London's 'best new spot for culture' by Time Out. The programme includes cutting-edge contemporary music, award-winning stand-up comedy, as well as theatre, dance, cabaret and everything in between.

As a registered charity, the trust also has a commitment to community access, engagement, and participation, including an education and community programme which has so far engaged over 1000 children and young people.

W5 Belfast

An award-winning Science & Discovery Centre in Belfast, Northern Ireland. W5's mission is 'to fire the spirit of discovery', intriguing and engaging visitors with hands-on and immersive learning in a fun and inclusive environment.