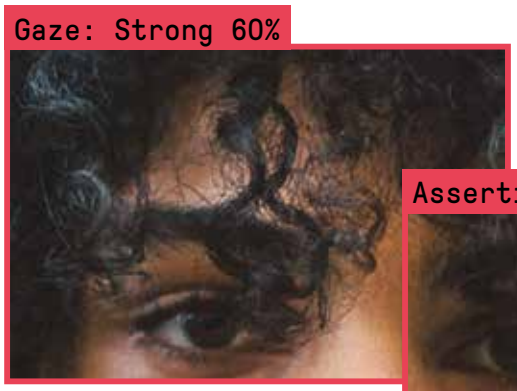
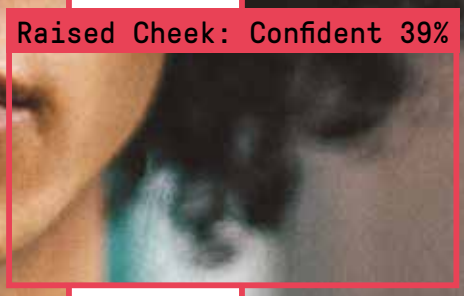
AI • more than • human

Tour pack





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Contents

1 Introduction

Mosaic Virus. Anna Ridler. 2018-2019. Videowork produced with a series of GANs

AI: More than Human is an unprecedented survey of creative and scientific developments in Artificial Intelligence, exploring the evolution of the relationship between humans and technology.

AI: More than Human presents new commissions and projects by artists, scientists and researchers **Joy Buolamwini, Es Devlin, Mario Klingemann, Kode 9, Lawrence Lek, Massive Attack, Lauren McCarthy, Yoichi Ochiai, Neri Oxman, Anna Ridler, Chris Salter, Sam Twidale and Marija Avramovic**, and **Universal Everything**.

The exhibition tells the rapidly developing story of AI, from its extraordinary ancient roots in Japanese Shintoism; Ada Lovelace and Charles Babbage's early experiments in computing; to AI's major developmental leaps from the 1940s to the present day to show how an age-old dream of creating intelligence has already become today's reality. Told through some of the most prominent and cutting-edge research projects, from **Deepmind, Jigsaw, Massachusetts Institute of Technology (MIT) Computer Science Artificial Intelligence Laboratory, Sony Computer Science Laboratories** alongside the artists who are embracing its new possibilities in their work.

Artificial Intelligence is everywhere and nowhere. Often hard to see, AI has the potential to find its way into every aspect of our lives. It can be defined in different ways but fundamentally AI is the endeavour to understand and recreate human intelligence using machines.

AI: More than Human explores our fascination with technology and the centuries-old desire to advance science, expand intelligence, and extend life. As we use AI to understand our own existence, the boundary between ourselves and technology becomes harder to see. Technology is showing traits and qualities which seem like us. As we become ever more involved, the question arises — 'where do we end and where does it begin?'.

The progress of AI is accelerating. It is driving huge shifts in how we live, how we relate to each other and how we perceive ourselves. As it helps to define our future, it may lead us towards new forms of life — some that we recognise and others that we don't. This is both daunting and liberating. It invites us to consider a world where our intelligence is not the only one. A world where the possibilities for intelligence are more than human.

Quick Facts

Hire fees	Upon application
Duration	3 months +
Dimensions	approx 1,000 –1,500 m^2
Duration of install/de-install	14 day install and 7 day de-install
Number of staff travelling for install/de-install	7 staff members (6 technical crew and 1 Exhibition Manager) 6 technical staff for 14 day install and 7 day de-install, Exhibition Manager to oversee the whole install and de-install process. (Venue to cover cost of flights, accommodation, per diem, visas for all 7 staff members).
Transport	We request that one way (incoming) transport is covered by the venue. Transport for the exhibition is part sea, part air freight (estimated 4 x 40ft Hicube sea containers, palletised and crated).

Venues

Venue	**Country**	**Dates**
Barbican Centre, London	UK	16 May – 26 August 2019
Groninger Forum, Groningen	Netherlands	6 Dec 2019 – 6 May 2020
World Museum, Liverpool	UK	10 July – 1 Nov 2020
TBC, Shenzhen	China	December 2020 – May 2021
Fernan Gomez, Madrid	Spain	22 July 2021 - 9 Jan 2022

2 The Dream of AI

Still from *Sunshowers*, Sam Twidale & Marija Avramovic, 2019

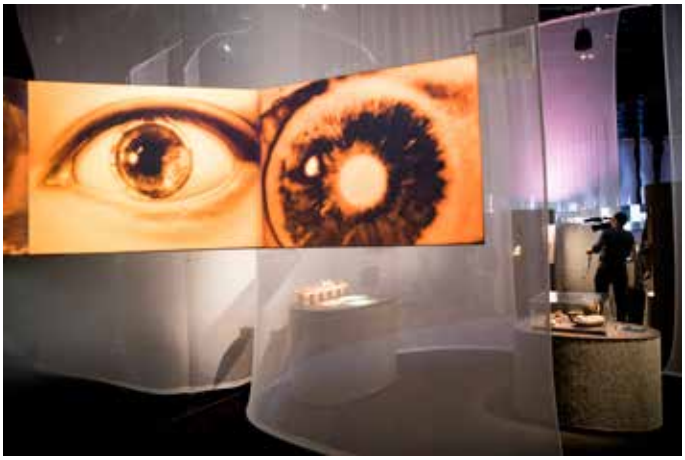
People have always been intrigued by the artificial creation of living beings, whether through magic, science, religion or illusion.

This interest has expressed itself differently across civilisations, from the religious traditions of Shintoism and Judaism to the science of Arabic alchemy, ideas of the Gothic and early developments in mathematics.

By giving life to non-living things, people have explored their place in the world — sometimes feeling powerful, and sometimes feeling fearful of a world they can't control.

This belief inspired attempts to create human-like figures with special abilities and to develop systems of intelligence that extend the mind. These two dimensions have driven the project of artificial intelligence to where it is today.

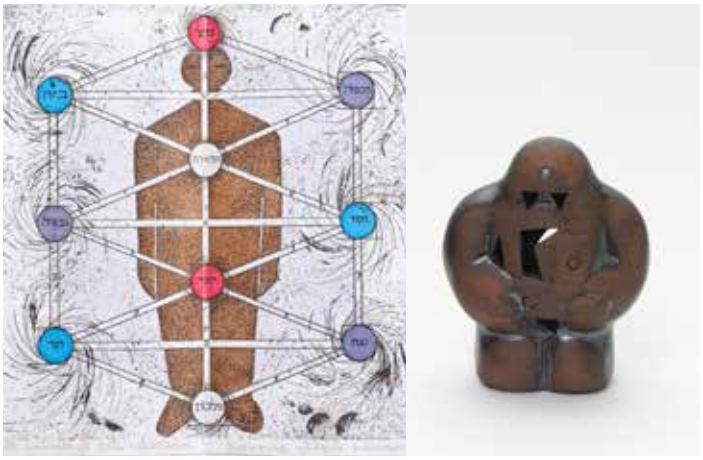
2 The Dream of AI



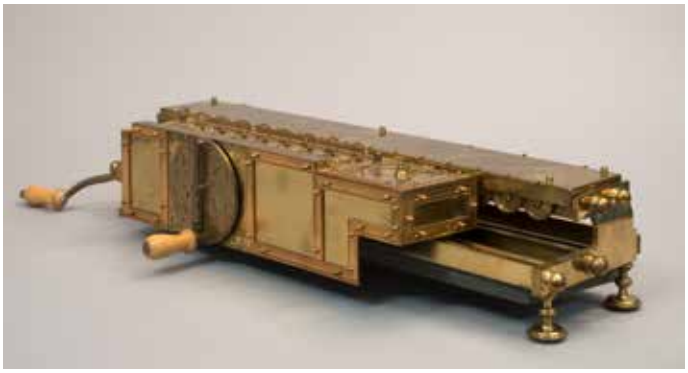
Stefan Hurtig and Detlef Weitz
AE/MAETH, 2016
3-screen video installation

Left: *Clay figurines [Dogu]* Unknown artist. Late Jomon period, 1000-400 BCE. Clay
Right: Pottery with Human face and raised hands. Unknown artist. early Kofun period, 301-400 CE. Ceramic replica

In a chamber containing stuffed animals, a globe and astrological devices Hudibras, about to draw his sword, startles Sidrophel and Whacum. William Hogarth. 1768. Engraving



Left: *Breathing Mud/The Legend of Golem. Lynne Avadenka.* 1999. Illustration from limited edition artist's book
Right: *Golem souvernir (Prague).* Unknown artist. 21st century. Clay.



Machine de Leibniz. Gottfried Wilhelm Leibniz. c. 1830. Replica

Sunshowers, Sam Twidale & Marija Avramovic, 2019

3 Mind Machines

Myriad (Tulips). Anna Ridler. 2018. Selection of digital prints with ink

The ancient desire to recreate the workings of the brain through technology gained momentum in the 19th and 20th centuries.
The early belief was that rational thought could be systematised and turned into formulaic rules. In the 1940s, this classic approach was transformed by the desire to not just decode the brain but mimic its workings.

By copying the behaviour of the brain's own neurons, it was possible to develop the first 'neural network'. Neural networks are computer programmes which self-improve over time. During the data explosion of the 2000s, they evolved to become the machine learning and deep learning that we know today. Technology that is able to teach itself can endlessly surprise us with its apparent creativity and its ability to see, hear and move.

3 Mind Machines

Installation shot with the Enigma machine, originally designed in c. 1944.

Theseus. Claude Shannon with Elizabeth Shannon. 1952.

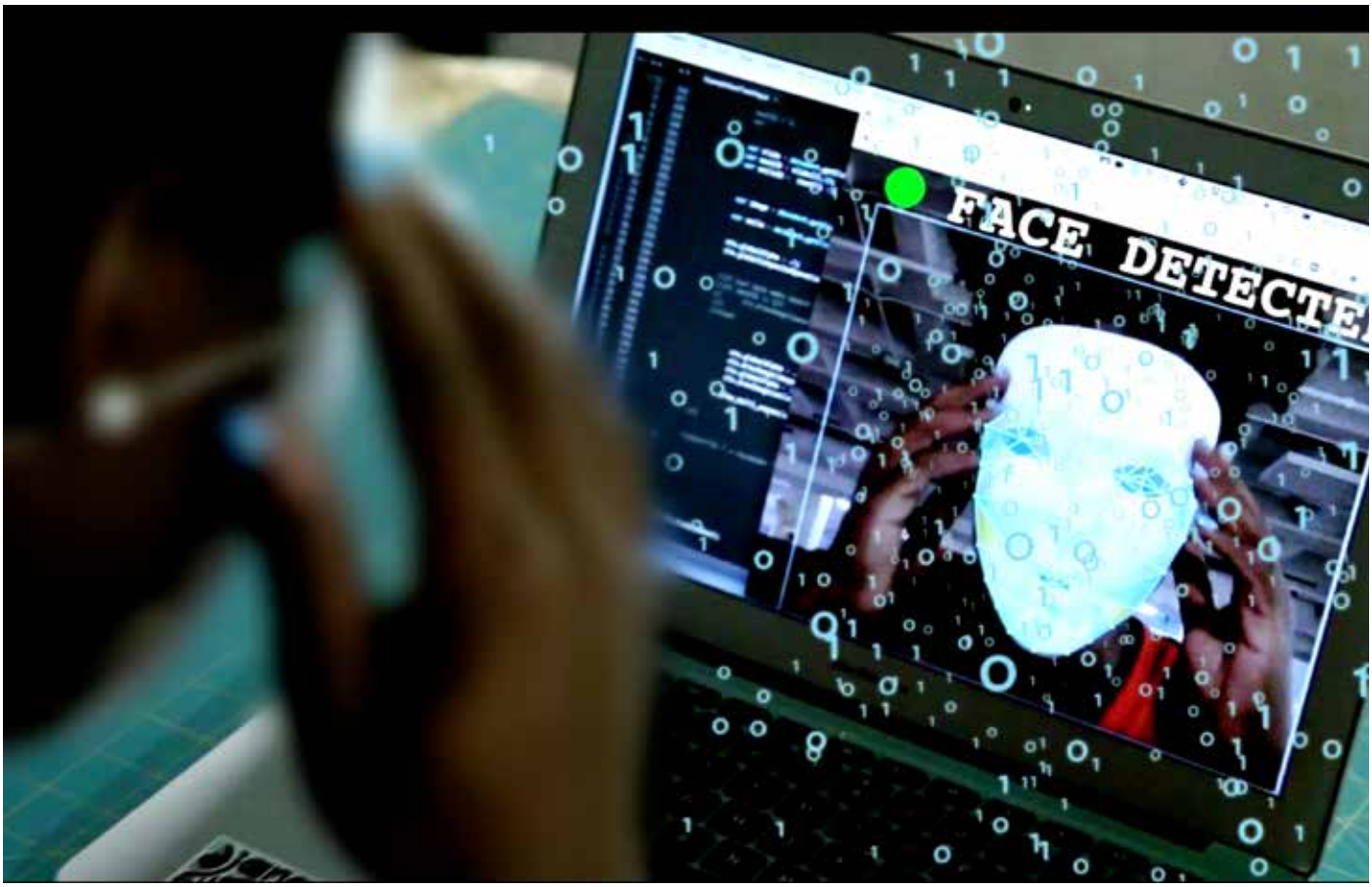
aibo. Sony Corporation. 2018.

Left: *My Artificial Muse/Face Feedback 2472.* Mario Klingemann. 2018. Digital image, Neurography
Right: Robotic Arm (mockup). Denso Corporation. 2014. Chemical wood model

Installation shot with Triadex Muse algorithmic music generator by Edward Fredkin and Marvin Minsky (1971-72) and interactive render of Minsky's Tentacle Arm, with Allan Turing's Bombe replica in the background

DeepDream: The Artificial Pareidolia. Alexander Mordvintsev. 2019. Video

4 Data Worlds



Gender Shades. Joy Buolamwini 2018. video

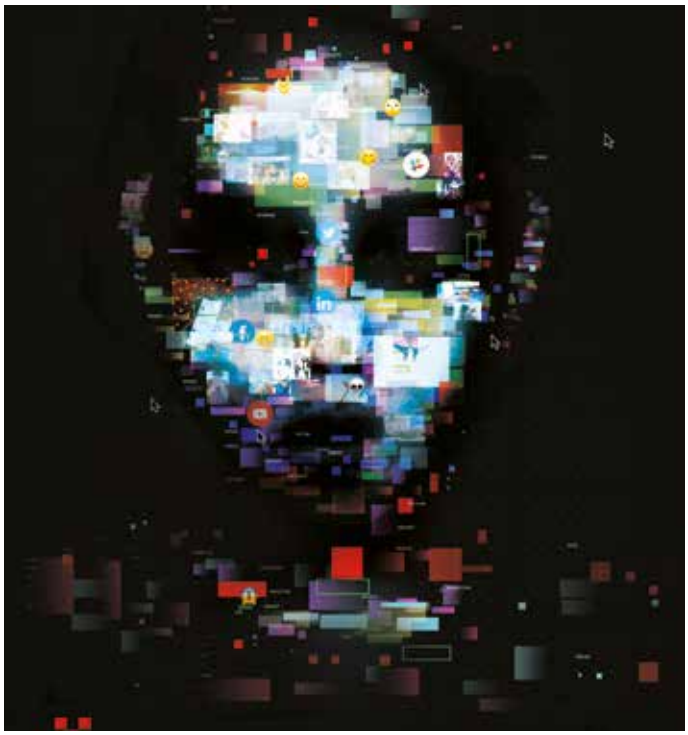
Today, AI is used all around us, all the time, shaping our lives in public and private space, through the media we consume and the products we buy.

While we might be aware of some of AI's manifestations, others are out of sight, entwined in global systems so complex that they are impossible to fully understand.

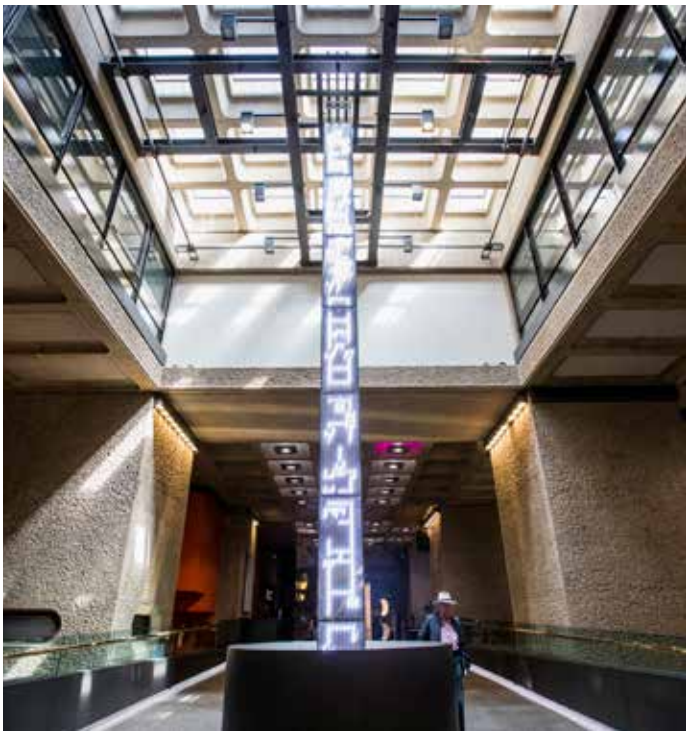
Data Worlds brings the reality of AI up close, by surfacing its hidden workings and opening up a future that is often exciting and sometimes disturbing.

This increasing proximity of AI raises ethical questions. Will our prejudices be amplified by the technologies we create? Who will be accountable for mistakes? How will AI affect privacy, freedom and truth?

4 Data Worlds



Seeing is Believing? Nexus Studios. 2019. Digital Interactive



Totem. Chris Salter in collaboration with Sofian Audry, Takashi Ikegami, Alexandre Saunier and Thomas Spier. 2019. Installation

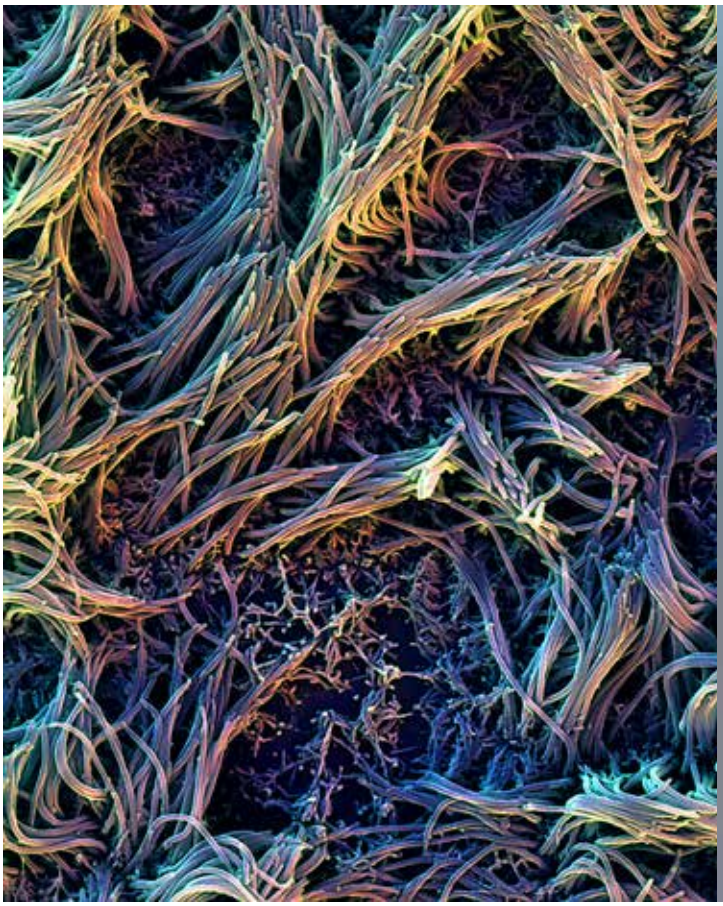
Learning to See. Nexus Studios with Memo Akten. 2019. Real-time artwork using a neutral network

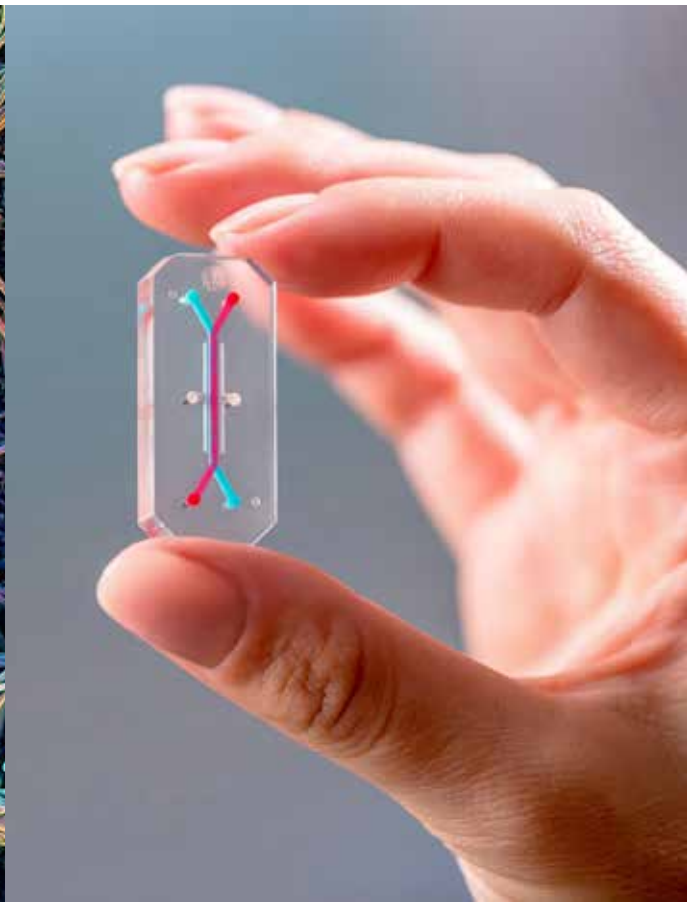
LAUREN. Lauren McCarthy. 2017. Custom electronics, outlet, camera and switch

Kreyon City. Sony Computer Science Laboratories. 2019. Interactive infrastructure game.

Affectiva Automotive AI. Affectiva. 2018. Multi-modal in-cabin AI.

5 Endless Evolution





Left: SEM image showing human ciliated cells inside Emulate's Lung-Chip. Donald E. Ingber and Dan Dongeun Huh. 2008. Right: Digital image Emulate's Organ-Chip. Donald E. Ingber and Dan Dongeun Huh. Flexible, clear, silicone polymer. 2008.

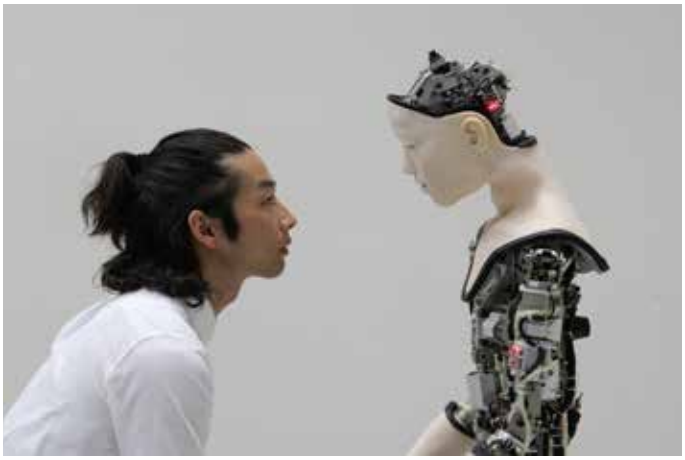
As AI permeates our lives, it merges with other scientific disciplines and begins to change our idea of the 'natural'.

While AI emulates the behaviour of the brain, the related research area of artificial life (A-Life) works with a much wider set of natural processes, including human and animal biology, and environmental science.

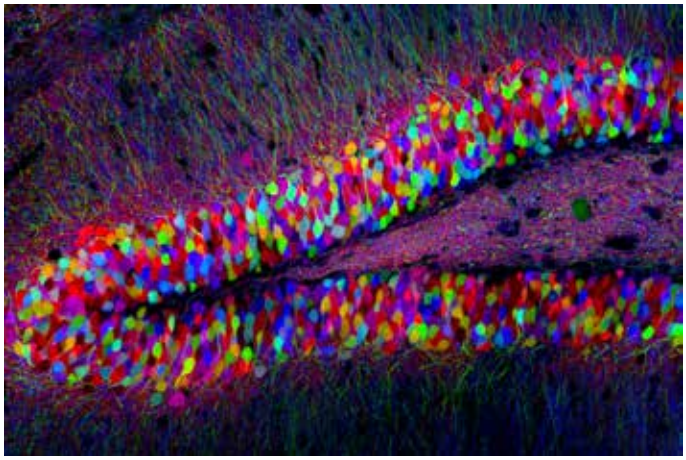
This gives us the potential to improve our bodies, eradicate illnesses, produce new food groups and even extend life. It is possible to imagine both new futures for our species and the creation of new species.

In this scenario, organic life is an expanding process — our form is not fixed at birth. As new body parts, new living environments and new beings are created, it is clear that our world is in endless evolution.

5 Endless Evolution



Co(AI)xistence. Justine Emard. 2017. Video still



Brainbow. Jeffrey Lichtman. 2008. 'Brainbow' transgenic mouse hippocampus

3D bioprinted organ scaffolds. Wake Forest Institute for Regenerative Medicine. 2019.

Matt Black Mezzanine DNA. Robert Del Naja and Dr. Robert Grass. 2018. 1 million copies of the Mezzanine album encoded in 901,065 DNA sequences. Produced by Turbobeads laboratory Zurich and Andrew Melchior. Manufactured by LMA aerosols.

Fiberbots, robotic fabrication of structure in progress. The Mediated Matter Group. MIT Media Lab. 2018.

Left: *Resurrecting the Sublime: digital reconstruction of the extinct Hibiscadelphus wilderianus Rock on the southern slopes of Mount Haleakala, Maui, Hawaii, around 1912.* Christina Agapakis, Alexandra Daisy Ginsberg, Sissel Tolaas. 2019.
Right: *Dried specimen of Hibiscadelphus wilderianus Rock, collected by Gerrit P. Wilder on Maui Island, Hawaii in 1910.* Digital scan. 2018

6 Highlights

Created especially for *AI: More than Human*, **Future You** is an interactive installation that allows you to face your synthetic, future self. Watch the unique character learn from your movements and challenge it to keep up as you teach it how to jump and dance.

Universal Everything, *Future you*, 2019
Interactive video projection with sound

Explore the ground-breaking story of a computer defeating a human at the ancient strategy board game, Go. Use the interactive tool to understand how to play this complex game and experience the surprise that unfolded after the machine played unexpectedly at **Move 37** of the second game in this historic match.

Deepmind, *Move 37*,
Created by The Workers in 2019

6 Highlights

Step inside the **PoemPortraits** installation to have your photograph taken and to donate one word to the evolving artwork. The chosen word, along with a word from a previous participant, is incorporated into a unique two-line poem generated by an algorithm and mapped onto your portrait.

Es Devlin , *PoemPortraits*, 2019
in collaboration with Google Arts & Culture and Ross Goodwin
Interactive artwork

Take a deep breath under the **Resurrecting the Sublime** installation to smell a flowering tree that has been extinct since 1912. The *Hibiscadelphus wilderianus* grew on lava fields in Hawaii but became extinct due to colonial cattle ranching. The smell of its flowers has been reconstructed by analysing DNA from a preserved plant.

Christina Agapakis, Alexandra Daisy Ginsberg, and Sissel Tolaas, *Resurrecting the Sublime*, 2019
Smell installation and documentary film

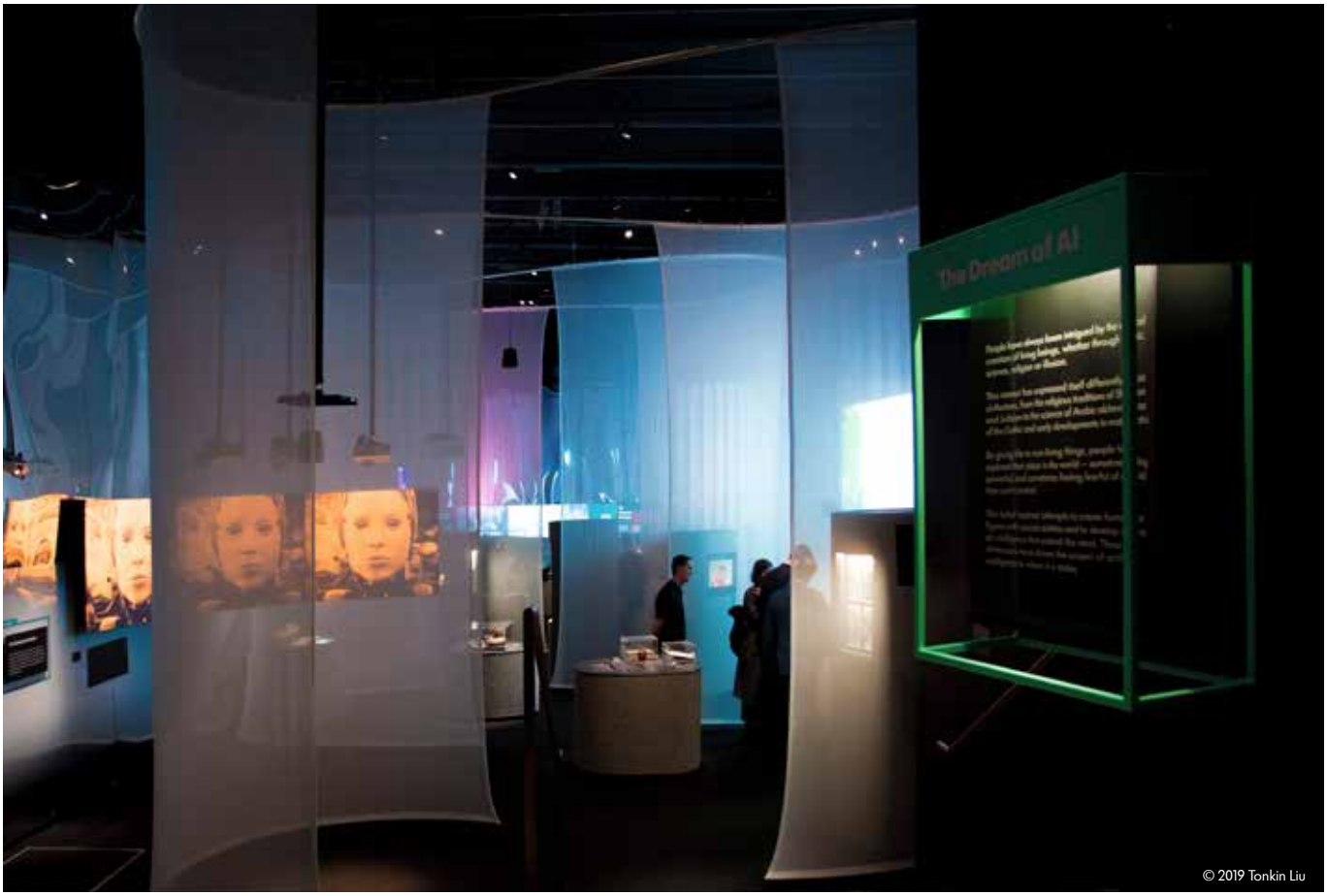
A unique, commissioned **timeline** of AI invites a deeper dive into this complex subject. Explore the incredible stories of the men and women who shaped the history of AI. Use the touchscreens to select and read in detail or watch the highlights on the big screen.

Timeline
Created by The Workers in 2019
Interactive installation

See the world through the eyes of a machine with this real-time interaction developed for *AI: More than Human*. **Learning to See** mistakes ordinary objects under the camera for images of the beautiful seascapes and mesmerising galaxies that its neural network has learned from. Like us, the machine can only see as much as it knows and construct an image from expectations based on what it has seen before.

Memo Akten, *Learning to See,* 2017
generative adversarial network

7 Installation Shots



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7 Installation Shots

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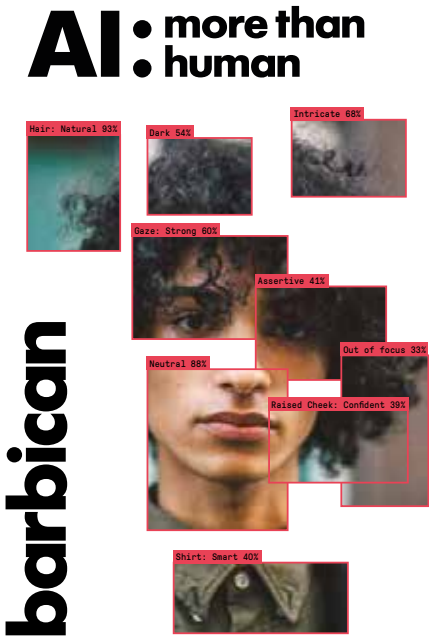
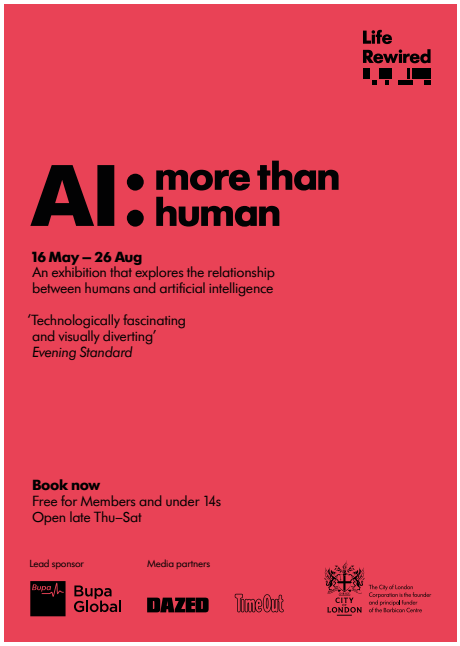
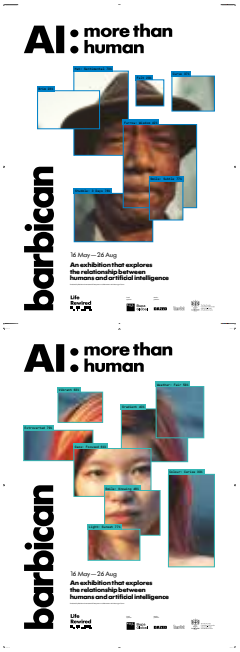
7 Installation Shots

7 Sample Marketing







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16 May – 26 Aug

7 Sample Marketing