





***An exhibition
reimagining how
we measure,
predict, and sense
the world today.***

The New Observatory

22 June - 1 October 2017

Artists

Burak Arikan, Wafaa Bilal, Natasha Caruana, James Coupe, Phil Coy, Citizen Sense, Julie Freeman, David Gauthier, Interaction Research Studio, Rachel Jacobs, Jackie Karuti, Kei Kreutler and Libre Space Foundation, Liz Orton, Proboscis (Giles Lane and Stefan Kueppers), Evan Roth, Stanza, Thomson & Craighead, Jeronimo Voss (also with Radamés Ajna), Yu-Chen Wang

Curators

Hannah Redler Hawes (ODI) and Sam Skinner (Manchester Metropolitan University and FACT)

Exhibition Design

Ab Rogers Design

The New Observatory is co-produced by FACT and the Open Data Institute (ODI).

Statutory Funders



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Works commissioned by the Open Data Institute as part of the Data as Culture programme were supported using public funding by the National Lottery through Arts Council England.

The New Observatory

22 June - 1 October 2017

The New Observatory transforms FACT into an observatory for the 21st century, bringing together an international group of artists exploring new and alternative modes of measuring, predicting, and sensing the world.

Humans have always used tools to observe, but now technology alters our perceptions more than ever. Today we are all connected to ever-growing systems of data. Corporations, governments, machines and individuals are constantly tracking and interpreting the smallest details of our lives.

Artists in *The New Observatory* create instruments, or use data, to measure the world differently. They conjure new and untold stories, from the personal to the political, micro to macro. They collectively challenge assumptions and standardisation, investigating the moments when logic fails and how that failure might create new possibilities.

Artworks reflect upon how powerful observational tools, once the preserve of scientists, are now part of everyday life. Liverpool has its own unique history of observation. The Liverpool and Bidston Observatories, active from 1845 and 1867, monitored natural phenomena from the stars to the tides, and created their own bespoke scientific instruments. The exhibition engages with this history and spirit, reimagining what an observatory, and observation, can be.

Many of the artworks in the exhibition are the result of unusual data gathering expeditions. Phil Coy visited ancient copper mines in Ireland, Natasha Caruana trawled coastal towns and pawn shops across the UK, and David Gauthier travelled out to sea to film a Waverider buoy in Liverpool Bay. Other artists collaborate with, or create, new communities of observation. Julie Freeman works with a colony of naked mole rats and Kei Kreutler and Libre Space Foundation invite us to become amateur astronomers.

The exhibition suggests we are becoming 'observatories of ourselves' and considers the roles of analysis, understanding, and imagination in this process. *The New Observatory* stands as an open call for everyone to become actively involved in responding to our complex, contemporary relationship with data. It offers a space to reassess our roles as active citizens within a 'surveillance' culture, and to forge more critical, creative relationships with the data landscapes we inhabit.

**James Coupe
(UK/US)**

A Machine for Living, 2017

Multimedia installation.

Dimensions variable.

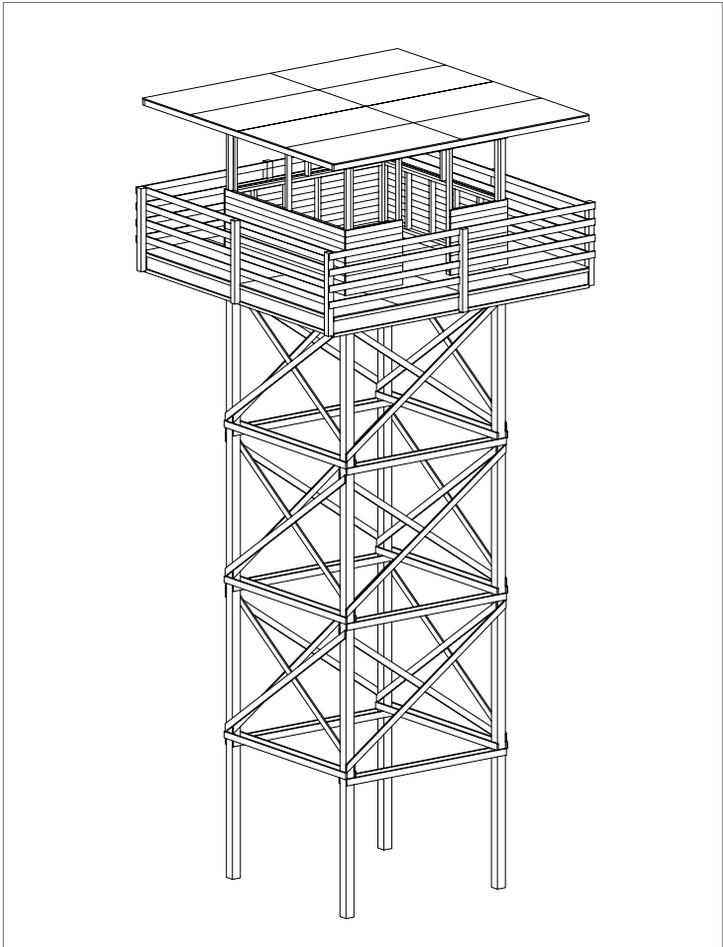
James Coupe examines the power and meaning of surveillance in our everyday life. His four-storey wooden watchtower, *A Machine for Living*, in the main foyer at FACT, is occupied by computers, algorithms and online labourers, working together to make human experience something which computers can begin to understand.

Through a modular network of screens, the watchtower embeds the living rooms, bedrooms and workplaces of hundreds of crowd-workers into its structure. The installation's surveilling (and surveilled) agents are members of mTurk (or Mechanical Turk). This on-demand scalable workforce, or crowdsourcing Internet 'marketplace' enables individuals and businesses to employ workers remotely to do tasks that computers are currently unable to. These crowd-workers complete tasks that require them to reflect, document, dream, plan, and consume all forms of observation - illustrating a very human approach to what we normally consider a machinic, computer-led, process.

Through the crowdsourcing of these tasks to an 'unseen' workforce, surveillance today is revealed as something bi-directional and dispersed. By bringing the normally outdoor watchtower structure into a gallery context, the work creates a strange kind of monument to observation and in an act of subversion, grants us a rare opportunity to consider who is watching whom.

Courtesy the artist. Commissioned by FACT with support from DXARTS (University of Washington), and American Hardwood Export Council.

James Coupe, *A Machine for Living*, 2017. Image courtesy of the artist and FACT.



Citizen Sense (UK)

Frackbox, 2014-2016

Converted mailbox; electronics; sensing equipment. Dimensions: 48 x 15 x 28cm.

Dustbox, 2016-2017

Ceramic structure; electronics; sensing equipment. Dimensions: 15cm diameter.

Sensors are a vital part of environmental monitoring within scientific study. The *Citizen Sense* project democratises these technologies through instruments for mass observation, enabling engagement with environmental issues, both locally and further afield.

Frackbox was designed to be covertly placed at the intersections between Pennsylvanian citizens' homes and nearby fracking sites in the United States. These structures (which at first glance appear to be the standard road-side US mailbox) contain a kit which monitors air pollutants and volatile organic compounds. Members of the Pennsylvanian community, working with the kits in 2014, were able to collect enough evidence to unlock an additional \$1.6 million of state funding towards further environmental monitoring.

The *Dustboxes* are a series of low-tech air pollution data collectors, housed in a ceramic case resembling an air pollutant particle. Residents of Deptford in London were able to borrow these devices for free from their local library to measure air pollution in their own areas. Each *Dustbox* streamed real-time data to an online platform, available for all to view at: citizensense.net

Courtesy the artist. Citizen Sense is a research and practice group based at Goldsmiths, University of London. Citizen Sense is led by Jennifer Gabrys, working in collaboration with Helen Pritchard and Lara Houston, along with community members, creative practitioners and scientific consultants. Citizen Sense is currently funded by the European Research Council (ERC).

Citizen Sense, *Dustbox*, 2016. Image courtesy the artist.



Interaction Research Studio (UK)

Datacatcher, 2015

Selective laser sintered nylon; bespoke electronics and data sources. Dimensions variable.

The Interaction Research Studio at Goldsmiths University, London create prototypes of deliberately open-ended objects designed to elicit strong feelings and memories as well as providing more functional uses.

The *Datacatcher* is a brightly coloured handheld device, reminiscent of a flashlight. It has been designed to help build relationships between people's experiences of data and their surroundings. Originally designed as a mobile device, the *Datacatcher* displays short snippets of thought-provoking socio-political data related to the area into which it is taken. Messages include factual information, such as typical income, education levels, and the number of pubs or GP surgeries nearby. Turning the control dial shows previous messages, or proposes more provocative or tongue-in-cheek questions such as "what can you hear?" or "how does it smell here?"

Using this device, people are able to build a multi-layered picture of their local environment that is data-rich and multi-sensory. Some of the sources of data include the Office for National Statistics, Fix My Street, Twitter, Wikipedia, Yahoo Finance and Zoopla.

Courtesy the artist. Additional data supplied by the following sources: The Environment Agency, Department of Energy and Climate Change, The Police, Experian Mosaic, Open Data Communities, Weather Underground and They Work For You. *Datacatcher* is part of a five year project funded by the European Research Council (ERC) conducted by a group of researchers based in the Interaction Research Studio at Goldsmiths, University of London.

Interaction Research Studio, *Datacatcher*, 2015. Image courtesy the artist.



**Rachel Jacobs
(UK)**

***The Prediction Machine,*
2015 - ongoing**

Sustainable oak; steel; aluminium;
printer; LCD screen; speakers;
laptop; cables; adaptors;
generator; bicycle chain and gears;
iPad. Dimensions: 145 x 32 x 46cm.

***The Promises Machine,*
2015 - ongoing**

Sustainable oak; steel; cables; iPad.
Dimensions: 135 x 32 x 40cm.

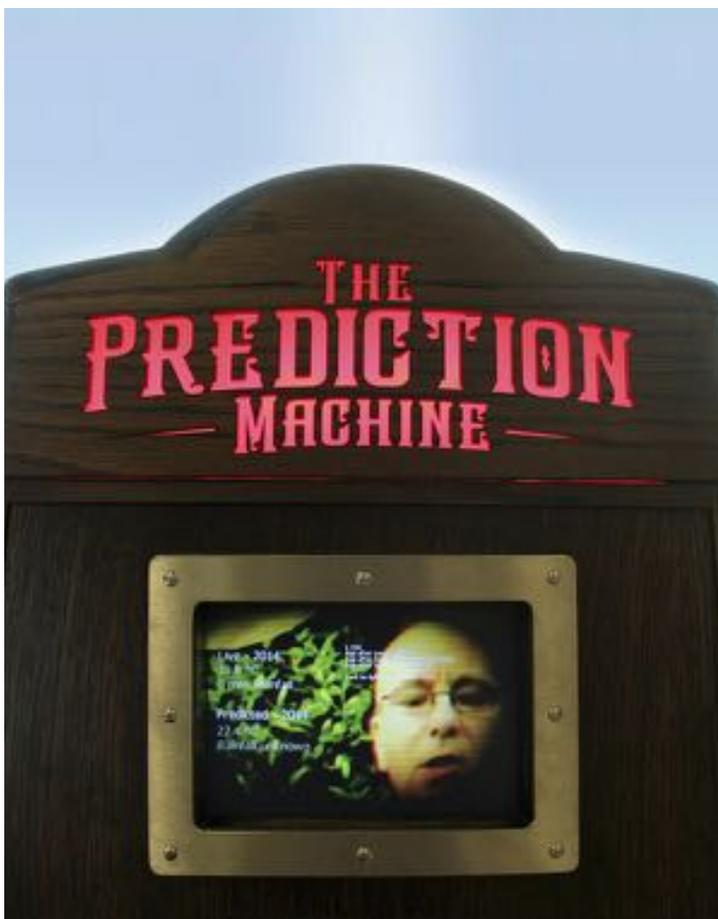
Rachel Jacobs' work merges art, environmental science and technology through cross disciplinary collaboration, exploring how to 'perform' scientific data.

The Prediction Machine is an interactive artwork based on Victorian-era fortune telling machines, hand-powered via a dynamo, and connected to a weather station and a live data feed. The work invites us to become immersed in the act of using an instrument, generating data, and observing the changing weather. The machine predicts 'moments of climate change' that we might experience in the future – from snow on a summer's day to three months of drought. Predictions are presented as short video messages from the future. The experience concludes with a printout of a 'climate fortune' we can take away and keep.

The Promises Machine presents a scientific explanation of the projected climate data, informing how *The Prediction Machine* makes predictions, and reveals a graph depicting 100 years of minimum and maximum temperatures for the local area. We are invited to write and submit our own promise or wish for the future, in response, and sign up to receive regular updates about our prediction and how close it might be to coming true.

Courtesy the artist. The short videos, or Predictions were produced in collaboration with members of FACT's Digital Ambassadors Group.

Rachel Jacobs, *The Prediction Machine*. Image by Julian Hughes.



**Jeronimo Voss (DE),
with Radamés Ajna (BR)**

***Applicate Against Time,*
2017**

Multimedia installation.
Dimensions variable.

Voss is interested in the narrative qualities of time-based media, and how science, time and history are constructed. Ajna is a multimedia artist exploring how machines affect our social interactions. *Applicate Against Time* explores the observing and management of time within contexts of precarious work.

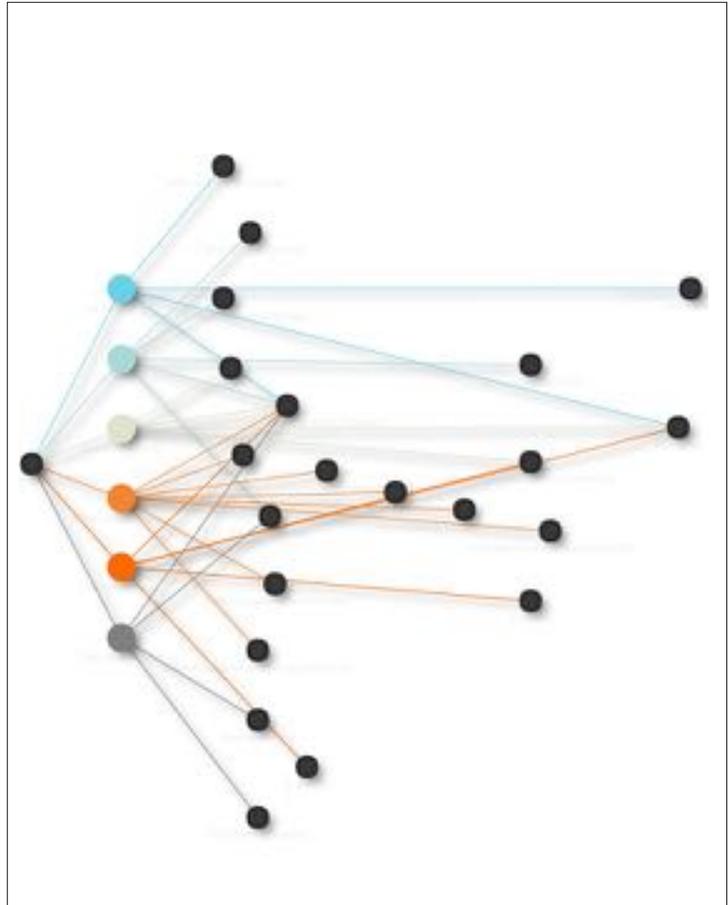
The project brings together living room furniture, media displays and open-source, time-management software. The 'NIKA.app' was created in collaboration with software engineer and media artist Radamés Ajna, during a residency at FACTLab, for use in the communal Nika.haus housing collective in Frankfurt, of which Voss is a member. A video montage combines promotional trailers for existing time management software with footage taken from the app. The project explores how time management tools (used predominantly in a commercial context) may be built and used for more socially responsible ends, such as the smooth running of a housing cooperative.

The furniture design is inspired by experiments in utopian modular living, in particular Ken Isaacs's *Super Chair* (1974), and Stafford Beer's and Gui Bonsiepe's *Cybersyn Operations Room* (1971).

Download the app here: <https://github.com/radames/NIKAapp>

Courtesy the artist. A new commission for FACT supported by ifa (Institut für Auslandsbeziehungen).

Jeronimo Voss in collaboration with Radamés Ajna. *Applicate Against Time*, 2017.
Image courtesy of the artist.



Yu-Chen Wang
(TW/UK)

I wishtocommunicatewithyou,
2017

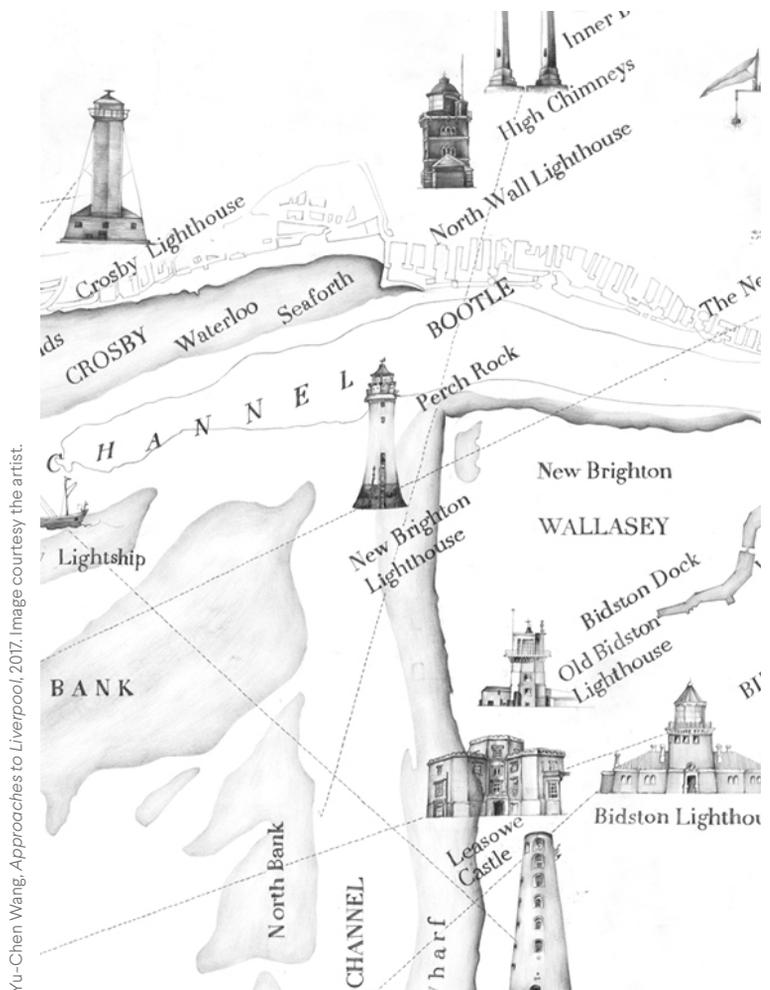
Drawing on paper, flags, iPad and website. Dimensions variable.

Yu-Chen Wang's central practice is narrative-led drawing. Her visual stories blur the boundaries between fact and fiction, nature and culture, past and future. *I wish to communicate with you* maps the different sites and technologies relating to the old Liverpool and Bidston Observatories, linking them to their current legacies such as the National Oceanographic Centre at Liverpool University. Wang's unique style of drawing renders a network of places, communities, and instruments as a vast evolving assemblage. Flags, installed by the artist at FACT and atop the Bidston Lighthouse and Bidston Observatory, depict her own designs for reworking traditional semaphore signals for the 21st century.

Wang's flags echo the 18th century merchant's signalling system used to mark the arrival of their vessels, reawakening Bidston's 200 year history as a site of flag-based communication. Local lore tells of sailor's wives watching for the hoisting of flags, to mark when their loved ones might return safely home.

Courtesy the artist. A new commission for FACT supported by Ministry of Culture (Taiwan) and using public funding by the National Lottery through Arts Council England.

Wang will also be in residency at Metal, Edge Hill for two months during the exhibition, developing an accompanying film project which will be screened at FACT, and delivering observational drawing workshops at FACT.



**Evan Roth
(US/FR)**

[http://
s33.820180e151.184813
.com.au](http://s33.820180e151.184813.com.au), 2016

Network located video.
Dimensions variable.

US artist Evan Roth applies a hacker philosophy to an art practice that visualises transient moments in public space, online and in popular culture.

The focus of Roth's *Internet Landscapes* series are the points at which the Transatlantic fibre-optic cables that carry the Internet emerge from the ocean. For these works, Roth ventures out into the landscape that physically hosts the Internet, in a personal quest to visualise and reconnect with a web which gradually feels more and more centralised and controlled.

The image depicted in the gallery is a radio tower in Australia, captured in infrared and streamed to a web page. The accompanying sound consists of field recordings taken at the same location, along with sonic elements of the artist's own bio-data (his heartbeat, for example). In order for the video to reach the viewer's browser, it is converted into infrared laser light which passes through the same physical location depicted in the video.

Presented here is a radio tower in Australia, it's size dictated by the invisible radio waves it is designed to transmit, affording a rare glimpse into that spectrum. Highlighting the inseparable relationship between the digital and the physical, Roth challenges the ways in which we approach online data. Through understanding and experiencing the Internet's physicality, one comes to understand the network not as a mythical cloud, but as a human made and controlled system of wires and computers.

Courtesy the artist and Carroll / Fletcher.



Evan Roth, <http://s33.820180e151.184813.com.au>, 2016.
Image courtesy the Artist and Carroll / Fletcher.

David Gauthier
(CA/NL)

Measure for Measure for Measure, 2017

Video with sound, approx. 3 mins;
tide-gauge hut; mixed media.
Dimensions variable.

***53°32'.01N, 003°21'.29W,
from the Sea, 2017***

Video with sound, approx. 15 mins;
Hantarex monitors; Waverider
buoy. Dimensions variable.

David Gauthier likes to mangle concepts, objects, languages, and disciplines. His work questions the ways in which meaning is ascribed to things and processes, particularly those which seem complicated and hard to understand.

Measure for Measure for Measure consists of a tide gauge hut in which the measurements produced by a tide measuring station (situated on the Liverpool docks) are read aloud. The project reflects the deep connection Liverpool has with the sea, and foregrounds how instruments related to the science of measurement (metrology) affect our understanding of the natural world.

Inspired by the work of painter J.M.W. Turner, *53°32'.01N, 003°21'.29W, from the Sea* foregrounds the elements lost in data depictions: the natural forces of the world. This audio-visual installation uses data transmitted from a Waverider buoy deployed in Liverpool bay (at the title coordinates) to create various outputs: a motion-corrected film of the buoy at sea, and a static representation of the data it is gathering and streaming online. Through a display of both the vigour of the sea in the first video, and the stillness of its numerical representation in the second, the piece draws a sharp contrast between the buoy and its data. It is almost as if the dynamics of the buoy's physical context come to be neutralised by the stillness of its corresponding data representation.

Courtesy the artist. A new commission for FACT with support from Canada Council for the Arts and EU COST Action IS1307. Produced during a residency at the National Oceanographic Centre, University of Liverpool, previously Bidston Observatory. With additional support from Datawell BV.

The Waverider buoy, first released in 1968, is capable of measuring very accurately wave height, wave direction, wave period, sea surface temperature and surface current, with data stored inside the buoy and transmitted via radio and/or satellite or GSM link.

David Gauthier, *53°32'.01N, 003°21'.29W, from the Sea, 2017*. Image courtesy the artist.



Wafaa Bilal (IRQ/US)

168:01, 2016 - ongoing

500 blank books; shelving; wishlist.
Dimensions variable.

Bilal's work is informed by the experience of fleeing his homeland of Iraq to the US, and existing simultaneously in two worlds. His provocative online performances and interactive works transform traditionally passive art experiences into active participation. *168:01* is a physical and intellectual embodiment of how online information networks can be reconfigured to more political and personal ends.

During the invasion of Iraq in 2003, the College of Fine Arts at the University of Baghdad lost their entire library of over 70,000 books. *168:01* serves both as a means to measure this staggering cultural loss and as a platform for its potential repair. The artist asks local and global audiences to help transform this destruction into a fresh start for Iraq's next generation, by purchasing books from a wishlist compiled by the faculty.

As the installation accrues donations, volunteers replace the blank books with new texts during weekly performances. In doing so, the library's shelves become saturated with knowledge and vibrancy and the structure becomes a 1:1 scale data visualisation of its own repair, and the success of the campaign. Select donors receive the blank exhibition books in return for their contribution and as a symbol of the void they have helped to rectify. At the end of the exhibition, all donated texts will be shipped to Baghdad.

To find out more, and how to donate, please visit fact.co.uk/16801

Courtesy the artist and The Art Gallery of Windsor. The Liverpool iteration of *168:01* by Wafaa Bilal is co-produced by Liverpool Arab Arts Festival and FACT. Transportation partner: Jayhawk.

Wafaa Bilal, *168:01*, 2016 - ongoing. Image courtesy the artist.



Proboscis (UK)

Lifestreams, 2012

3D printed digital artefacts generated from bio-sensor data; video with sound, 7.57 mins; infographic print.

How do we know what we know? And how do we make meaning from this? The artist collective Proboscis are interested in ways to create manifestations and experiences of data that are multisensory, and that go beyond traditional screen-based visualisations.

Their project *Lifestreams* proposes a method for capturing and storing unique personal health data that is memorable, magical and private. Beautiful seashell-shaped 3D-printed forms embody step count, sleep patterns, blood pressure, stress factors and pulse rate: materialised in the shells as rotation, length, scaling, growth disturbance and surface pattern. The resultant objects transform cold data into intimate, tactile *Lifecharms*, that might serve new forms of interaction between doctor and patient for example. Anyone can make meaning from them but their data remains private.

Accompanying the installation is a video demonstrating the development of the shells from private datasets, as well as an image explaining how the data is made physical. Also shown are several larger scale versions of the shells, 3D-printed in FACTLab to allow visitors to get a sense of the textural nature of the original objects. Please feel free to touch these versions.

Courtesy the artist. Project team: Giles Lane and Stefan Kueppers in collaboration with scientists at Philips Research UK. Originally commissioned by FutureCity for Anglia Ruskin University's public art programme, *Visualise*.

Proboscis, *Lifestreams*, 2012. Image courtesy the artist.



**Liz Orton
(UK)**

***The Longest and Darkest
of Recollections*
2016 - ongoing**

11 C-type and paper photographs
mounted on variable materials;
stones; text. Dimensions variable.

Liz Orton's work is concerned with entanglements of land, vision and natural science. She often engages with archives, both real and imagined, to explore the tensions between personal and systematic forms of knowledge.

The series *The Longest and Darkest of Recollections* considers notions of time, memory and the construction of knowledge. Alongside photographs, playfully exploring the methods used by geologists searching for evidence in the 'deep time' of rock formations, is a text directed to the artist's ageing father in the light of his fading memory.

The work is informed by Orton's visual research into the practices and gestures of touch and measurement used by geologists. It fuses scientific and sensual knowledge with other more personal systems of understanding, while subtly questioning the role of photography as fixed evidence. It speaks of an ongoing curiosity about geological history, and obsessions with systematising and categorising time and the earth.

Courtesy the artist. Developed as part of the MEAD Fellowship at the University of Arts London.

Liz Orton, *This connection should make us suspect*. Image courtesy the artist.



**Natasha Caruana
(UK)**

Divorce Index, 2017

HD film with sound, 5.21 mins.

Curtain of Broken Dreams, 2017

Approx. 1,560 rings joined with brass links. Dimensions variable.

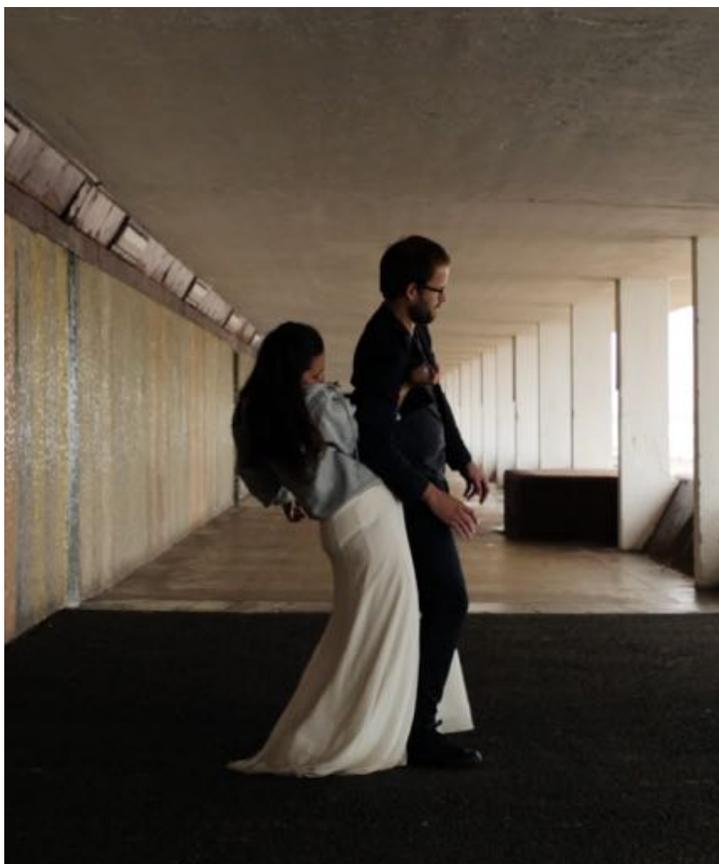
Natasha Caruana's art practice is grounded in research concerned with narratives of love, fantasy and betrayal.

Caruana used open data to identify coastline towns within Britain as having some of the highest divorce rates in the country, and explored further social datasets to try to identify why. *Divorce Index* is a filmic response to her findings. A couple in dishevelled wedding clothes - the artist and her husband - perform a curious dance at Bottle Alley on Hastings' promenade. Each movement is a choreographed gesture interpreting data around the pressures which may affect a marriage, including unemployment, health care, access to libraries, higher education and gambling.

In the entrance to *Divorce Index* is the *Curtain of Broken Dreams*, consisting of interlinked chains of 1,560 pawned, discarded wedding rings which create a physical representation of the number of divorces in the UK over a typical 12-month period. Becoming enmeshed in the physical evidence of the breakdown of so many unions raises the question of how essential the right conditions, as well as the right person, are to achieving everlasting love. The work poses the question of whether couples might ever consider relocating for the sake of a relationship, if the data predicted an unhappy end or better odds elsewhere?

Courtesy the artist. Both works commissioned by the Open Data Institute as part of the Data as Culture programme, which was supported using public funding by the National Lottery through Arts Council England. This is the premiere of the work.

Natasha Caruana, *Curtain of Broken Dreams*, 2017. Image courtesy the artist.



**Jackie Karuti
(KE)**

**There Are Worlds Out
There They Never Told You
About, 2016**

Two videos from an ongoing mixed-media series:
Animated video with sound, 1.05 mins; water-filled plinth / Video with sound, 3.41 mins.

Jackie Karuti (based in Nairobi, Kenya) works across various media to explore themes of death, sexuality, identity and urban culture.

There Are Worlds Out There They Never Told You About consists of two films exploring what it might mean to migrate or run away to worlds that exist in our imagination. The first is an animation of an uncertain hand-drawn landscape. It is populated by communications technologies, crows and mythical beings engaged in a choreographed series of: transmission, reception, control, call and response. Another film shows a collection of handmade paper boats navigating turbulent shallow waters under which a map of the world sits. The boats are assisted – or disrupted – by a god-like, disembodied female hand.

Running through both works is an allusion to the legend of an underwater civilization, descended from slaves thrown overboard during the passage from Africa to the Americas. Its non-linear exploration hints at themes of migration, displacement, and the idea of home – both what that means and how it might be something that can only be recreated in the imagination. The project presents humanity as part of an interrelated system within imaginary, technical and actual realities, whilst suggesting that logical readings may be less effective than those that allow for speculation.

Furthermore, these works act as a reminder that we choose to ignore the power of imagination at our peril, underlining the fact that everything man-made was once imagined.

Courtesy the artist and Circle Art Agency.

Jackie Karuti, *There Are Worlds Out There They Never Told You About*, 2016.
Image courtesy the artist and Circle Art Agency.



**Jeronimo Voss
(DE)**

Inverted Night Sky, 2016

Dome; lens; video with sound,
10 mins. Dimensions: 3 x 3 x 2m.

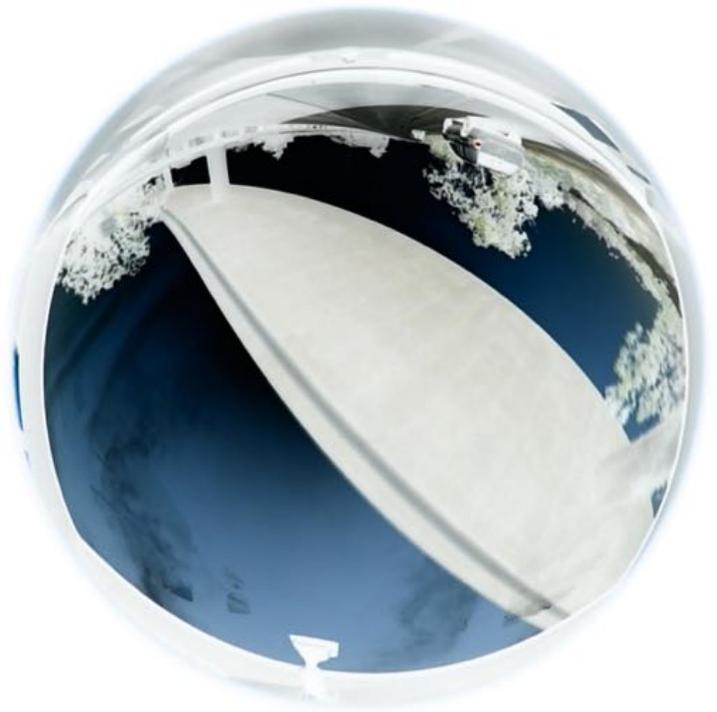
A video dome projection takes us on a journey through the inner-workings of the Anton Pannekoek Institute for Astronomy, Amsterdam, from the kitchen to the lab. We travel through the everyday activity of the observatory from teacups in the sink to workstations where researchers explore gravitational waves. Alongside, a text rotates around the dome's radius that muses on the relationship between time and power.

The project engages with the work of socialist astronomer Anton Pannekoek, exploring the convergence of art, astronomy, and politics, and how each strive for a certain form of universality. The work is also concerned with realism, both inside and outside the field of art, and how this can be understood as a radical expansion of one's own observational framework or perspective.

The use of a dome appropriates the architecture of the observatory, as a space of both discovery and invention, utility and fantasy. A place to build constellations, to describe or gesture toward that which is elusive and ungraspable.

Supported by ifa (Institut für Auslandsbeziehungen). The film was produced at Anton Pannekoek Astronomy Institute, Amsterdam.

Jeronimo Voss, *Inverted Night Sky*, 2016. Image courtesy the artist.



**Stanza
(UK)**

The Reader, 2015

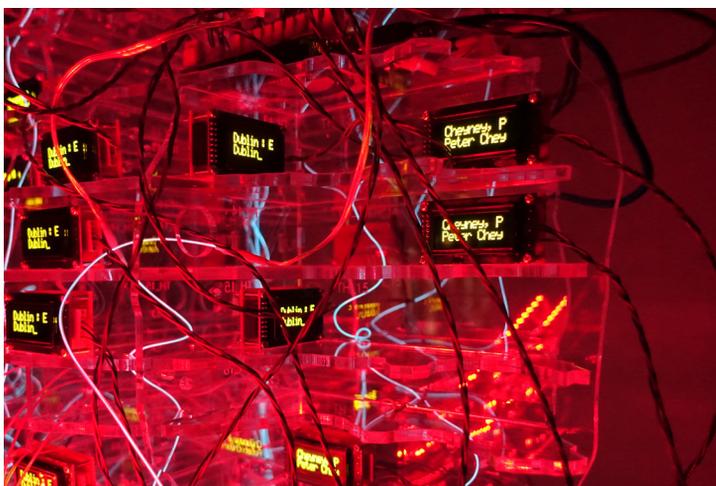
LED matrix displays;
custom-made PCB boards;
controller system and cables;
perspex; laser cut metal; arduinos
with custom software and
controller boards.
Dimensions: 225 x 84 x 80cm.

Stanza works across media, frequently with arts technology, CCTV, online networks, touch screens, environmental sensors, and interactive art. Recurring themes in his work include the urban landscape, surveillance culture and alienation in the city.

This six-foot high sculpture, *The Reader*, is a self-portrait of the artist wearing a hoodie and reading a book. It anticipates a near future where embedded technologies will become part of our everyday lives. Set into the perspex form are 100 mini text displays linked to custom-made cables which carry data pulsing through the body. The data is drawn from every book published since 1952, and accessed using open data provided by the British Library. It speaks to an age of continual consumption of information from endless sources, and encourages us to digest content as well as simply consuming it. In an age of 'infobesity' the work invites us to reflect upon the act of reading - decoding, creating and absorbing meaning, as well as simply receiving.

Courtesy the artist. Commissioned by Milton Keynes Libraries as part of The Digitalis Programme, which was supported using public funding by the National Lottery through Arts Council England.

Stanza, *The Reader*, 2015. Image courtesy the artist.



**Phil Coy
(UK)**

***Substance-Awholehistoryof
hollows and reliefs, 2017***

VR headset; 360° video with binaural sound, approx. 7 mins; photo-etched copper plates; computer; copper ore; copper rod. Dimensions variable.

Phil Coy's practice includes films, sculpture, architectural installations, sound, text, photography and performance that collage concepts rooted in the radical art and literature of the 20th century, with the languages and architectures of global commerce.

Substance explores the materials and processes that enable us to image the earth's surface, and reveals the scars that the extraction of these materials have left. The work focuses particularly on the mining and refining of copper, the process of photolithography used in the production of silicon chips, and the CCD (charge-coupled device) sensors found in most digital and satellite cameras.

It takes the form of a dymaxion world projection onto photo-etched copper plates - a dymaxion map being a 2D representation of the world with its form heavily interrupted in order to preserve shapes and sizes. Alongside, a Virtual Reality (VR) environment proposes a journey through these hollowed-out landscapes. In so doing the work offers the viewer an experience where both the medium and subject of observation merge.

Courtesy the artist. Supported by Leverhulme Trust, Invisible Dust, Rutherford Appleton Laboratory (RAL Space) and using public funding by the National Lottery through Arts Council England. This is the premiere of the work.

Phil Coy, *Substance (a whole history of hollows and reliefs)*, 2017. Hemispheric production still. Image courtesy the artist.



**Kei Kreutler (US/GE)
and Libre Space
Foundation (GR)**

**Open Space Observatory,
2017**

Open source ground station;
wi-fi; live-stream video.
Dimensions variable.

Kei Kreutler is an artist and design researcher exploring how cultural narratives of emergent and ubiquitous technologies shape their use. Libre Space Foundation develop free and open source space related projects and technologies, including the hardware and software for the first open source satellite in the world.

Open Space Observatory (OSO) is an initiative to promote gatherings and the development of open source infrastructure for observation of satellites, spacecraft, and space junk. Over the last 60 years, the magnitude of satellites' use and governing power has increased exponentially. Today the sky is full of over 4000 'orbiting spy-eyes', officiating on decisions of military armament, technological development, and territorial, commercial, and juridical zones. Through fostering the momentum of civic space initiatives, the future of satellites could be more evenly distributed. OSO looks toward building a network of sky gazers (at the intersection of subcultures and engineering) by installing infrastructure for space observation in public spaces, and re-purposing old observatory sites.

The OSO has installed a SatNOGS, an open networked satellite ground station, on the roof of FACT to project live feeds of satellite observation into the gallery. The ground station is built with accessible, affordable components under open hardware license.

Courtesy the artist. *Open Space Observatory* is a new site-specific iteration for FACT.

Kei Kreutler and Libre Space Foundation, *Open Space Observatory*, 2017.
Image courtesy Libre Space Foundation.



**Burak Arikan
(US/TR)**

MYPOCKET, 2008

Animation; custom software;
list of predictions; RSS feed;
receipts. Dimensions and
duration variable.

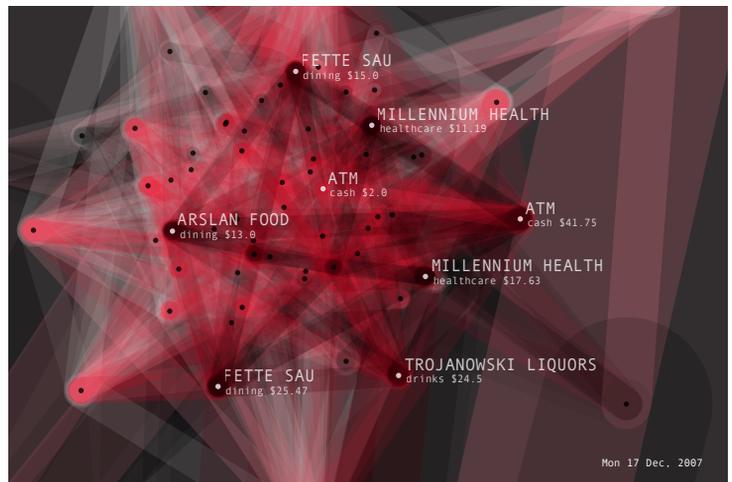
Burak Arikan is a New York and Istanbul based artist working with social, economic, and political issues to generate network maps and algorithmic interfaces, that attempt to render inherent power relationships visible and discussable.

MYPOCKET raises questions about how predictive technologies, particularly those that use our personal data, shape our choices through the assumptions they feed us. Custom software, written by the artist, predicted his potential (and catalogued his actual) spending patterns for a two-year period. The *Transactions Feed* publicly posts each of these economic interactions along with the percentage of transactions accurately predicted. The *Transactions Graph* visualises data corresponding to the time of each transaction demonstrating relationships between them. A collection of original marked receipts of correctly predicted transactions, or 'predicted objects', bears witness to the system's accuracy.

The work provides a revelatory self-portrait, exposing how much we divulge about ourselves through our own consumer choices, the trails of data we create, and their potential value to others.

Courtesy the artist. *MYPOCKET* is a 2007 commission of New Radio and Performing Arts, Inc., (aka Ether-Ore) for its Turbulence web site. It was made possible with funding from the Jerome Foundation.

Burak Arikan, MYPOCKET, 2008. Image courtesy the artist.



**Julie Freeman
(UK)**

**Rodent Activity
Transmissions (RAT)
systems, 2016 - ongoing**

Data visualisation website
and associated artworks.
Dimensions variable.

Julie Freeman works with living systems in order to stimulate unexpected connections to nature. She enjoys the random unpredictability that animals bring, which cannot be anticipated or synthesised. Freeman's multi-part work uses real-time data to allow us a peek into the lives of a colony of electronically tagged naked mole-rats. It embodies a broad series of unconventional approaches to working with data to evidence different structures and forms of life. It also pushes the possibilities of data into new artistic territory.

A Selfless Society is an online audio-visual artwork, the *RAT systems* app uses traditional visualization, *Colony Omega Redacted Portraits* is a photography project, and *This is Nature Now* harnesses innovative soft robotics techniques.

Courtesy the artist. Supported using public funding by the National Lottery through Arts Council England and by the Centre for Public Engagement at Queen Mary University of London. Collaborators: Dr Chris Faulkes and Marcin Ignac.

The app can be downloaded from the Appstore (iPhone) <http://bit.ly/ratsystems> and Google Play (Android) <http://bit.ly/playRATsystems>.

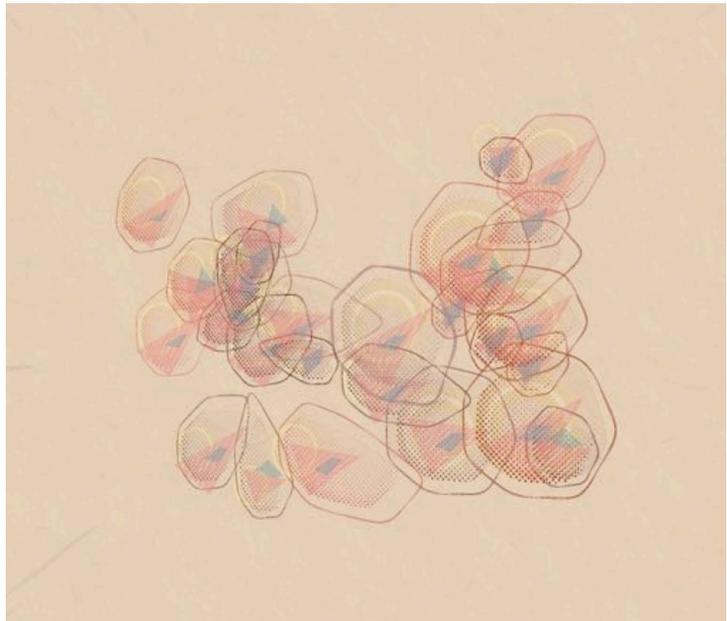
A Selfless Society, 2016

Online audio-visual artwork.

A Selfless Society is an abstract animation of forms whose shape and behaviour are influenced by the activity patterns of a naked mole-rat colony – the animals are tracked using an RFID (Radio-frequency identification) system to provide this live activity data. Freeman's interest in these animals stems from their cooperative lifestyle. The colony as a whole has the strongest chance of success, while lone individuals have little chance of survival. Naked mole-rats are 'eusocial' like bees, meaning only the queen breeds. What would happen if human society were restructured in this way?

Collaborator: Marcin Ignac.

Julie Freeman, *A Selfless Society*, 2016. Image courtesy the artist.



This is Nature Now, 2016

Real-time data-driven silicone kinetic sculptures (documentation version); 3 x single channel HD digital video with sound. Duration variable.

This is Nature Now represents live data from a naked mole-rat colony through physical movements of an artificial-material. It explores the body language of objects through techniques in soft robotics. The work asks us to reflect on how specific technologies mediate our experience of the natural world, and how we now encounter nature through our devices and broadcast mechanisms. Can living things be represented through data? If so, what are the traits a non-biological physical object requires to convey this sense of life?

Collaborator: Professor Kaspar Althoefer

Colony Omega Redacted Portraits, 2016

24 C-type photographs. 351 x 234mm.

Should data privacy be restricted to humans? *RAT.systems* involves tracking (but not experimenting on) Colony Omega - a colony of naked mole-rats maintained in an artificial environment designed for behavioural observation. Freeman has blocked out all of their eyes. This humorous act strangely highlights the individuality of each of the naked mole-rats. It also stems from, and refers to, wider and more serious concerns. Poachers are said to be using metadata from tourist's photographs on safari, or even academic papers, to locate and kill endangered animals. Respecting an animal's right to privacy may become akin to respecting their right to life. The work re-contextualises more human-centric privacy issues.

Portraits by Lorna Ellen Faulkes, commissioned by Julie Freeman and Dr. Chris Faulkes.



Julie Freeman, *Colony Omega Redacted Portraits*.
Image courtesy of Lorna Faulkes + Julie Freeman 2016.

Thomson & Craighead (UK)

Recruitment Gone Wrong, 2017

Automated masks; video with sound, 7.29 mins; office chairs. Dimensions variable.

Thomson and Craighead make artworks and installations for both galleries and online spaces, which engage with global communications networks and explore how real time processes and live (or recorded) data transmission can be used as a material or artistic medium.

This theatrical installation invites us to inhabit a covertly recorded conversation between recruiters from the American National Security Agency (NSA) and student activists, who took the NSA to task over the 2013 Edward Snowden revelations. At particular times we are invited to adorn ventriloquists' half-masks to become strange cyborg bodies involved in a form of grotesquely absurd and querulous karaoke. The piece raises questions about net neutrality, openness, and transparency in a culture where we are encouraged to accept invasions of privacy for commercial and political gain as the 'new' normal. The students' disruptive act, the artists' dramatisation of the event and our collusion in performing each part, also speak to ways in which forms of data gathering and analysis are susceptible to unconventional and subversive means which may ultimately transform meaning and intent.

Visitors are invited to participate in *Recruitment Gone Wrong* daily between 12-1pm. The installation can be activated for viewing at all other times by pressing the button. Please ask gallery staff for assistance.

Courtesy the artist and Carroll / Fletcher. Commissioned by the Open Data Institute as part of the Data as Culture programme, which was supported using public funding by the National Lottery through Arts Council England. This is the premiere of the work.

Thomson & Craighead, *Recruitment Gone Wrong*, 2017.
Image courtesy the artist.



Related Events

Throughout the exhibition, you can take part in a diverse programme of activities including workshops, screenings and talks. Here are some of the highlights:

For more information about any of the events, or to book a place, visit fact.co.uk/tno.

Talks and Events

Opening Weekend

Thursday 22 June to Sunday 25 June
/ FACT, various locations

Join us for an opening day programme including artist talks and lectures starting from 1pm, with a chance to preview the exhibition alongside exclusive artist performances from 6–8pm. The programme continues over the weekend with family workshops and curator tours.

Curator Tour with Hannah Redler Hawes and Sam Skinner

Friday 23 June / 2pm / FACT Foyer
Free, booking required

Hannah Redler Hawes and Sam Skinner, curators of *The New Observatory*, lead a tour of FACT's new group exhibition. Find out more about the concepts behind the works reimagining the notion of the observatory today.

GPS Tarot with Chris Wood

Wednesday 5 July / 5–8pm / FACT Foyer
Free, drop-in (please note that spaces are limited)

Join artist Chris Wood for *GPS Tarot*, a series of encounters utilising the position of GPS satellites in the act of divination to read your actions and emotions.

Future Station: Yu-Chen Wang

Tuesday 8 August / 6:30–8:30pm
/ Metal, Edge Hill Station
Free, booking required

Join Yu-Chen Wang for this special edition of *Future Station* in partnership with Metal. Wang will discuss the development of her latest artwork *I wish to communicate with you*, with exhibition co-curator Sam Skinner.

A new commission for FACT supported by Ministry of Culture of the Republic of China (Taiwan) and by using public funding by the National Lottery through Arts Council England.

Late Nights at FACT

Wednesday 5 July, 2 August & 6 September
/ 6–8pm / FACT, various locations

For the first Wednesday of every month during *The New Observatory*, the exhibitions will remain open until 8pm, giving visitors the chance to view the show after hours. Running alongside this will be a specially-curated programme of events and workshops.

Curator Tour with Sam Skinner

Wednesday 6 September / 7pm / FACT Foyer
Free, booking required

Join us for a special late-night opening of *The New Observatory*, as curator Sam Skinner leads a tour of the exhibition. The tour will be followed by a screening of *Nostalgia for the Light* chosen by the curators, accompanied by an introduction and discussion about their selection.

New Materialisms and Old Observatories

Saturday 23 September / 6pm / FACT
Free, booking required

Join FACT for an evening of talks exploring the historical and philosophical contexts to *The New Observatory*, including discussion of ideas for Bidston Observatory's reinvention as an artistic research centre.

With Dr Rick Dolphijn (Senior Fellow at the Centre for the Humanities, Utrecht University), Prof. Aud Sissel Hoel (Marie Skłodowska-Curie Fellow at the Image Knowledge Gestaltung Cluster, Humboldt University, Berlin), and Fiona James and Kym Ward (Arts Research Centre at Bidston Observatory).

Supported by COST Action IS1307 New Materialism: Networking European Scholarship on 'How Matter Comes to Matter'.

Film

Nostalgia for the Light

Wednesday 6 September / 8pm / The Box
£4/3, booking required

The New Observatory curator Sam Skinner presents a screening of *Nostalgia for the Light*, the outstanding documentary from Chilean director

Patricio Guzmán, a moving exploration into the past interweaving the harsh political history of Chile's Atacama Desert with its present reputation as a renowned astronomy site.

Liverpool Radical Film Network

**Wednesday 28 June / 6:30pm / The Box
£4/3, booking required**

Join Liverpool Radical Film Network for a specially selected film screening inspired by the themes of *The New Observatory*. The film will be followed by a discussion with invited guests, with discussion of how the preservation and ownership of data feeds into activism today, and how it can be utilised as a tool for survival going forwards.

Yu-Chen Wang Screening

**Wednesday 27 September / 6:30pm / The Box
Free, booking required**

Yu-Chen Wang presents a screening of *I wish to communicate*, the film project that she has developed whilst in residency at Metal, Edge Hill for two months during *The New Observatory*. The screening will be introduced by Wang, with the opportunity to discuss this new work afterwards.

A new commission for FACT supported by Ministry of Culture (Taiwan) and by using public funding by the National Lottery through Arts Council England.

Offsite

The Liverpool and Bidston Observatories, which began observations in 1845 and 1867, monitored natural phenomena from the stars to the tides, and created their own bespoke scientific instruments. Taking this history as a key reference point, selected artists in the show were chosen for their ingenious explorations into how access to the data, devices, and networks once exclusive to scientists are now part of our everyday lives.

The development and research of these works has created several partnerships with research facilities, and spaces of observation across the city. Here you can either experience additional works by *The New Observatory* artists, or discover more about Liverpool's rich legacy of observation.

Liverpool Planetarium: Phil Coy

**Every Saturday and Sunday throughout
September and 1 October / 4:30pm / World
Museum, William Brown Street, Liverpool**

Visit the World Museum for a chance to experience Phil Coy's 360° *Substance - A whole history of hollows and reliefs* video at the Liverpool Planetarium, and learn more about the history of the old Liverpool and Bidston Observatories via their fascinating displays.

Supported by Leverhulme Trust, Rutherford Appleton Laboratory (RAL Space) and by using public funding by the National Lottery through Arts Council England.

Tide Prediction Machines at National Oceanography Centre

**3rd July, 1st Aug & 5th September / 2-4pm
/ National Oceanography Centre, Joseph
Proudman Building, 6 Brownlow Street**

Visit University of Liverpool's National Oceanography Centre to see two recently restored Tide Prediction Machines, as used at Bidston Observatory. The carefully engineered devices simulate the rise and fall of the ocean tide, and were used to produce tide tables for ports - and prove a precursor for Rachel Jacobs' work, which explores how to 'perform' scientific data. For further information visit: tide-and-time.uk/visit

Bidston Lighthouse

**Open every Saturday afternoon until the end
of August / Guided tours on the hour from 12pm-
3pm / Bidston Lighthouse, Wilding Way, Bidston
Hill, Wirral, CH43 7RA**

Open every Saturday afternoon until the end of August / Guided tours on the hour from 12pm-3pm / Bidston Lighthouse, Wilding Way, Bidston Hill, Wirral, CH43 7RA.

Bidston Lighthouse will open for guided tours on Saturday afternoons, July to August, during the exhibition. Bidston Lighthouse has a rich tradition of its own, spanning telecommunications, navigation, lighthouse optics and women in the workplace. Visitors can also learn about the changing role of Bidston Observatory over the past 150 years, from its scientific roots, to its imminent re-invention as an artistic research centre.

Yu-Chen Wang will also link FACT to the Observatory and Lighthouse through a series of flags she has designed, installed at all three locations.

**See bidstonlighthouse.org.uk for prices and
September opening times.**

Learning

Come and discover creative ways to experience *The New Observatory* in the Learning Space in FACT's foyer; a place for families, schools and the local community to engage with and experience the exhibition in a new way. To get the most out of your visit, pick our free Family Pack, which includes learning ideas, gallery talking points and things to do at home.

FACT at Liverpool Makefest 2017:

Talking to Satellites

Saturday 24 June / 9am-5pm
/ Liverpool Central Library, L3 8EW

FACT is pleased to be back at Liverpool Makefest, the North West's biggest maker event. This year we will be running a drop-in workshop where you can learn more about satellites orbiting the earth with the Libre Space Foundation. Come to Liverpool Central Library to talk to satellites, and continue your journey to FACT to see the rest of the show.

SatNOGS is a project of the Libre Space Foundation. Initiated during the NASA SpaceApps Challenge in 2014 at Athens Hackerspace in Greece, the project won the Hackaday Prize 2014 competition.

Do Something Saturdays

24 June - 30 September / 12-4pm / FACT
Free, drop-in

Every Saturday throughout *The New Observatory* we will be running workshops inspired by the show. Through these, families can discover a different way of experiencing the exhibition, mapping the connections between the works and instruments on display using new techniques. Facilitated by artists and FACTLab these free, drop-in sessions are designed for families to make, do and learn together.

Prototype Summer Camp

Survival kit: How to take control of your own data

FACT is looking for young detectives, hackers and futurologists! *Prototype Summer Camp* is a great chance for young people to get creative with technology through a series of hands-on activities: making and testing inventions to spark imagination, create stories and make films about future worlds.

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technology through a series of hands-on activities: making and testing inventions to spark imagination, create stories and make films about future worlds.

The camps will offer learning experiences aimed to promote critical thinking and creative use of technology, in order to control our own data. Participants will work with the FACT team on DIY experiments in order to produce a survival kit for the future of e-safety.

All levels of experience are welcome; just bring creativity, curiosity, and a packed lunch.

**8 to 11 yrs: 25-27 July & 8-10 August / 9:30am-3pm
£60 per child**
12 to 14 yrs: 1-3 August & 15-17 August / 9:30am-3pm / £60 per child

Limited spaces are available free of charge for children eligible for free school meals.

Arts Award at FACT

FACT is offering the chance for young people to obtain their Bronze Arts Award by participating in the learning programme for *The New Observatory*. For more information please contact learning@fact.co.uk

Sci-Films to Challenge the Future

Free of charge, registration needed.
See fact.co.uk for dates.

Join us for a series of learning sessions combining films and hands on activities to explore the role of film in imagining an alternative future.

Sessions include: *What is Dystopia?* (age 13-15 years), focusing on *Pumzi*, Wanuri Kahiu, 2009; *Challenging Stereotypes* (age 13-15 years), focusing on *Attack the Block*, Joe Cornish, 2011; and *Earth Survival Guide* (age 11-13 years), focusing on *Glitterball*, Harley Cokeliss, 1977.

School visits

FACT is offering tours and workshops for schools, aimed at encouraging student participation to stimulate creative ability with tailored visits aimed at 5-8 years and 8-16 years.

An Education Guide will also be available, including an outline of the works presented in the show, learning objectives, gallery discussions and post-visit suggestions to stimulate the learning process in the context of the exhibition. Download the pack from fact.co.uk, and register for a visit by contacting education@fact.co.uk

Find out more

For more information about the FACT building, exhibitions, volunteering, booking a group tour, accessibility or hiring a space call 0151 707 4464, visit fact.co.uk or email info@fact.co.uk.

To find out first about upcoming events, exhibitions and opportunities, become a FACTivist for free!

To sign up visit fact.co.uk/factivists.

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