

Da Vinci Engineered

From Renaissance mechanics to contemporary art

Exhibition Guide

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Professor Stephanie Haywood, Head of Electrical & Electronic Engineering at the University of Hull launched the Amy Johnson Festival by saying: 'Engineering is about creating practical solutions to the everyday problems such as housing and water supply alongside tackling the challenges of sustainable energy, mitigating climate change and an ageing population. It is underpinned by science and maths but also needs art and design. It can be about vision and creativity and also about the everyday skills needed to turn ideas into products.'

This exhibition examines how engineering, through practical applications and concepts, is inspiring and being used by artists today. Contemporary art explores the world we live in through a range of media and techniques for making art. Artists are combining traditional skills and new technology to create inspiring and thought-provoking new work. In recent years, art practice has embraced dialogues with people working across a range of disciplines, provoking new ideas. 'Da Vinci Engineered' demonstrates how such conversations lead to the creation of exciting new work including print series, metal sculpture, video or installation.

The artists in this exhibition have been given the opportunity to re-think their practice in relation to engineering, flight and Leonardo Da Vinci. At a time when young people are often asked to choose between 'the arts' or 'the sciences' at secondary school, 'Da Vinci Engineered' shows us that we should, instead, embrace many different approaches to learning. Engineers and artists are both creative: Leonardo Da Vinci never had to choose whether to be an engineer, a sculptor, painter or architect as designs for his flying machines demonstrate.

Artists: Claire Barber, Sabine Bieli, Savinder Bual, Cath Campbell, Clare Charnley, Nicola Dale, Nicola Ellis, Heinrich & Palmer, Simone Aaberg Kærn, Ruth Levene, Clare Mitten, and Helen Schell

Lara Goodband, Curator



Leonardo da Vinci

Brush Anemometer • Funnel Anemometer • Study for a United Wing Glider • Flying Machine • Inclinometer • Parachute • Vertical Ornithopter • Aerial Screw • Flying Wing • Hang-glider • Study for a Mechanical Wing

Leonardo da Vinci's many drawings and sketches show that he was constantly fascinated by the idea of flight. The studies he carried out were mainly focused on the careful observation of the flight and anatomic structure of birds - what makes flight possible, how air and wind currents affect the flight path - but he also considered the materials most suited to building his inventions. He believed that it was possible to build a flying machine by reproducing the morphological characteristics of birds. He stated that "A bird is an instrument working according to a mathematical law. It lies within the power of man to make this instrument with all its motions." This meant that it was possible not only to reproduce the flight of birds, but also to mechanically recreate it. Leonardo's brilliant intuitions led him to anticipate some of the fundamentals of flight which aeronautical science would manage to realise only at the end of the nineteenth century.

The Niccolai Collection of Leonardo da Vinci's machines consists of over 250 models rebuilt with materials dating back as far as the 15th

and 16th centuries (wood, metal, ropes and fabrics). In addition to a permanent exhibition at the Leonardo da Vinci's Museum in Florence, the collection has travelled the world. This is the first visit of any part of this collection to Britain. For this exhibition, we have selected 12 machines that exemplify da Vinci's remarkable explorations into the physics of flight and the design of flying machines.

Niccolai Teknoart's company philosophy has evolved from that of the small 90s workshop to today, when more weight is now given to scientific and historical research into the links between the machines described in the Codices and the designs of great engineers and architects who preceded and succeeded Leonardo. They have also ensured that their machines are working models with good mechanical descriptions, so that the public might understand the principles of physics underlying their movement or use.



Claire Barber

Ventilation Dress II • 2016

Inflatable sculpture

Ventilation Dress II takes the form of an auxiliary ventilation fan. The flowered pattern design is the same as that on a dress worn by the 1972 National Coal Queen to the National Coal Mining Reunion in 1976.

Noise abatement regulations led to the replacement of the ventilation fan at Snibston colliery in Leicestershire. While this 'silent fan' was being fitted the National Coal Queen Margaret Dominiak was wearing a new blue floral nylon dress. Claire Barber states: 'The blue floral dress and the silent fan act as a plinth to each other. Both elements are borne from the concept of inducing fresh air into miner's lives.'

Claire Barber is a Lecturer in Textile Crafts at the University of Huddersfield. She has exhibited widely in the UK and internationally including Australia and Japan.

<http://goo.gl/buZ2Jj>



Sabine Bieli

Hatched • 2016

Acrylic glass, nylon, waxed braided thread and mohair

Sabine Bieli uses threads to 'draw' and light to create unique three-dimensional sculpture. This new work, made especially for this exhibition, is a stylised pair of wings inspired by the themes of the Amy Johnson Festival. Sabine Bieli explains the making of the work by saying: 'The shape of the wings builds the matrix for a bundle of invisible threads joining two acrylic sheets. Above our heads, sewn and tied to the vertical threads, a three-dimensional pair of wings unfolds. They are made from a white mohair wool spun in Yorkshire with the name 'destiny'.'

Bieli grew up in Switzerland and now lives in Hull. Her experience of working on building sites and in a fine mechanics workshop have influenced her working practice.

www.sabinebieli.com



Savinder Bual

Pinjekan • 2015

Wood, cotton, recycled carrier bag, steel & print on paper

This work is inspired by a fan called a Pinjekan that Savinder Bual saw in the rice fields of Bali. The wind-propelled device sets a stick in motion that bangs on an object creating a drumming noise. Using skills she learnt from a Balinese kite maker, Bual creates hand-held artworks that are powered by walking. She describes her inspiration as:

'We attempt to fly but are far from free from the binds of our thoughts. The whirring of our minds prevents us from being in the moment as we constantly flit between the past to the future. My fascination with flight relates to a sense of freedom from our attachment to thoughts.'

Savinder Bual has exhibited widely in the UK including as part of the 2011 Bloomberg New Contemporaries touring exhibition. She studied at the RCA and continues to live in London.

www.savinderbual.com



Cath Campbell

Diving Board • 2011

Stainless steel

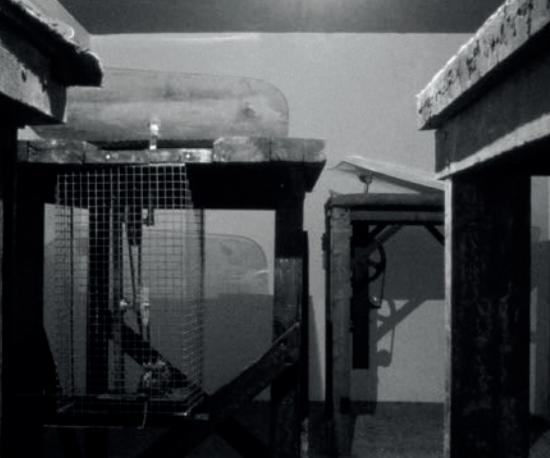
Lighthouse • 2012

Cardboard, perspex, paint

Cath Campbell is interested in the status, meaning and fabric of architecture. She uses architectural imagery from memory, imagination or the internet to create works that reinvent our associations with the built environment. Campbell uses a range of media to, as she explains, 'create a world of make-believe spaces inspired by encounters with actual places that are closed off or inaccessible, questioning my relationship between reality, desire and experience.'

Cath Campbell studied Fine Art at Newcastle University where she continues to live and work. She is represented by Workplace Gallery, Gateshead. She has exhibited widely throughout the UK and the rest of Europe, and has received many commissions.

www.axisweb.org/p/cathcampbell



Clare Charnley

to rock • 1993/2016

Digital video transferred from hi-8

This is a film of an installation originally exhibited in 1993, first installed at City Racing and then at the Whitechapel in London. The artwork was originally made with the help of the Humberside Polytechnic's mechanical engineering department. The film shows large pieces of curved glass being rocked slowly with the aid of motors, pulleys and gears. Charnley describes this rocking motion as being linked, 'to the idea of change.' Saying, 'I thought of the piece when I had spent a day on a roof, re-slating. This gave me a view of the street and I started to notice the occasional man pushing a pram below. The piece was made in a moment of optimism regarding gender roles.'

Clare Charnley has exhibited widely throughout the UK and internationally. She is currently showing work in the exhibition 'No Quiet Place' at The Tetley in Leeds, the city where she lives and works.

www.clarecharnley.com



Nicola Dale

Down • 2010

Ordnance Survey maps of Great Britain

Defying the ease, speed and perfection with which artworks can now be made digitally, Nicola Dale's delicate sculptures revel in slow, human imprecision. She uses ephemeral or natural materials for their capacity to retain the impression of her imperfect touch. Underpinned by a rigorous attention to process, she investigates what her hands can achieve with minimal apparatus. Her work takes time. *Down* was made by Dale cutting all the Ordnance Survey maps of Britain into the same feather shape. She describes her choice and manipulation of materials as, 'a reaction against our depthless, screen-mediated world.'

Nicola Dale has exhibited widely throughout the UK and USA including at the Yorkshire Sculpture Park. She studied at Manchester School of art where she continues to live and work.

www.nicoladale.com

Nicola Ellis

Chain reactions • 2014

Chainsaw chain, MIG weld

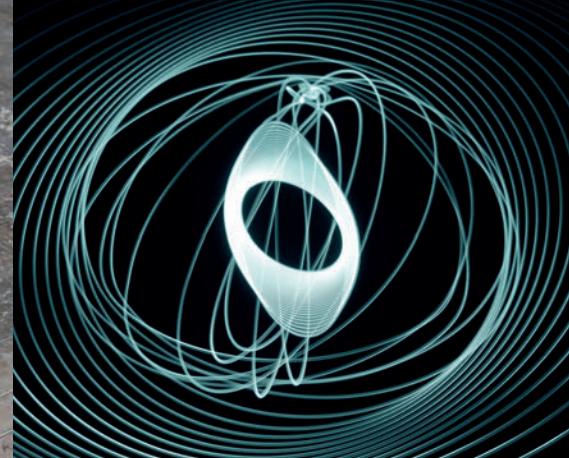
No heat necessary • 2014

Mild steel round bar, mild steel weld, slag inclusions

Nicola Ellis examines attitudes to and traditions in welding and the use of steel in sculptural, industrial and bespoke fabrication. Nicola Dale describes the sculpture *No heat necessary* as being, 'the result of a physical conversation between my body and a steel bar'. The work was finished when Dale became physically exhausted. She says *Chain reactions* shows, 'the potential that welding processes have to warp parent material - generally something identified and avoided by fabricators.'

Ellis' new project is concerned with the recent history of UK steel. She is currently exploring its socio-political issues by engaging with Unions, businesses, local authorities and individual steelworkers. Nicola Ellis has exhibited widely in the UK and the rest of Europe. She currently lives and works in Manchester where she is represented by Mark Devereux Projects.

www.nicolaellis.com



Heinrich & Palmer

Strange Attractor • 2016

Sand, light and neodymium magnets

Strange Attractor evolved through discussions with Lecturers in the Department of Engineering at the University of Hull and is inspired by Amy Johnson's flights. The artists Anna Heinrich and Leon Palmer describe the work as: 'A magnetic pendulum swings in an arc across a large disk of white sand onto which three circles of continuously changing coloured light are projected. These circles overlap each other to form a central section of white light under which three magnetic centres exert an invisible force. The pendulum cuts a fine pattern in the sand which traces its various journeys towards equilibrium and the calm elliptical spiral at the centre. The magnets however, exert a strange attraction and bring a degree of uncertainty to the airspace and the exact direction that will be taken. Occasionally the pendulum completely changes direction and can even become stranded at a magnetic pole.' Viewers are invited to swing the pendulum.

Their collaborative work also includes large-scale projections, films, outdoor installation and light boxes. They have been awarded many commissions and worked across the UK and internationally for more than twenty years.

www.heinrichpalmer.co.uk



Simone Aaberg Kærn

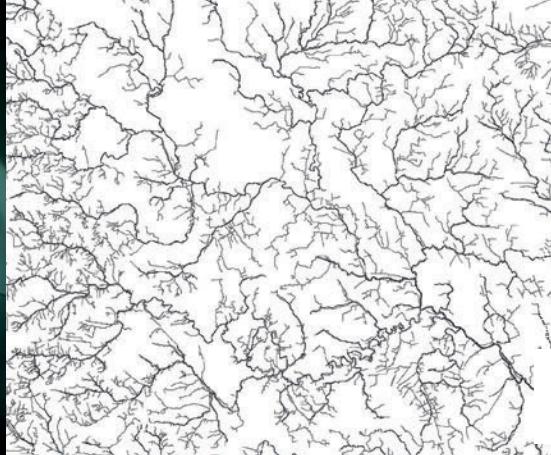
Sisters of the Red Star • 1999 - 2007
3 channel video with sound

This three-screen projection concentrates on the experiences of three women Russian Air Force pilots during the Second World War. The video-collage combines documentary scenes of the aerial warfare with interviews of the pilot by Simone Aaberg Kærn.

The dream of flying and its associated thoughts of unbound freedom is central to Kærn's work. She has become well-known for the risky journey she made in 2002 in a small plane from Copenhagen to Kabul inspired by an Afghani girl's dream of flying. The resulting work examined complicated socio-political and geographical issues as well as the position of the female pilot in a male-dominated world. These themes are central to the work on display here. Kærn says: 'Sky and space are playing fields for power and politics, but they are also equally the place of freedom and self-realisation.'

Simone Aaberg Kærn is based in Denmark. She has exhibited widely throughout Europe and America.

www.skysisters.com



Ruth Levene

Clean Water Pipes: YW Area Postcode S • 2015
Waste Water Pipes: YW Area Postcode S • 2015
Yorkshire Rivers • 2015
Giclée prints
Rivers • 2015
Vector laser cut engraving, 3mm clear acrylic

By working with engineers from the Pennine Water Group and Yorkshire Water Ruth Levene mapped the river networks and buried infrastructure to create a series of prints that explore Yorkshire's natural and manmade water systems. The work asks what it means to engineer something by questioning how the systems and infrastructure we weave our lives around help to shape our understanding of the world. The works on display are from 'Hidden Waters', a series of work produced during Ruth Levene's time as artist-in-residence in the Faculty of Engineering at the University of Sheffield.

Ruth Levene has exhibited widely in the UK and abroad and has been awarded major commissions. She studied Fine Art at Hull School of Art and Design and is now based in Sheffield.

www.ruthlevene.co.uk



Clare Mitten

The Pollinator • 2015
Pistil Whorl • 2015
Seed Shield • 2015-16
Daisy Wheel • 2016
Mixed media

Clare Mitten explores relationships between historical and contemporary technologies through handmade machines. She is fascinated by engineering in nature, in particular that of seed dispersion. For this exhibition, Mitten presents a collection of fantastical cardboard prototypes of plant-machine hybrids. For example, *Pistil Whorl* suggests a spinning spore, satellite or drone as much as it does the reproductive parts of a tulip it is actually derived from.

Mitten describes her work as being, 'at odds with the precision-world of engineering and the sleekness of contemporary technology' saying, 'they question the stereotypes of gender within the worlds of botanicals, the domestic and engineering.'

Mitten has received a prestigious Jerwood Award. Her next solo exhibition will be at the William Morris Gallery, London in the city where she lives and works.

www.claremitten.com



Helen Schell

Spaceship 2 • 2016
Acrylic paint on canvas

Helen Schell has become fascinated by recent technological developments that are allowing space exploration, particularly the European Space Agency's mission to colonise the moon. Schell says: 'I specialise in art inspired by space exploration and engineering, much of this is produced in collaboration with scientists. My current practice employs geometric proportion and space manipulation using optical illusions and space exploration imagery. It takes the form of large paintings, installations and smart material costumes with bold patterns inspired by engineering and future space travel.'

Helen Schell is a Space Ambassador aligned to the current Tim Peake mission. In 2015, she was awarded a Pollock Krasner Foundation grant to research and visit UK Space Gateway, the European Space Agency, Royal Astronomical Society and National Space Centre. She is currently collaborating with Northumbria University's Solar Physics group and lives in Gateshead.

<http://thenewbridgeproject.com/portfolio/helen-schell/>



Da Vinci Engineered Artists' Talks

A series of talks by exhibiting artists in association with BAE Systems and University of Hull

Heinrich & Palmer

in conversation with David Sowden,
School of Engineering, University of Hull

Thursday 7 July / 6.00pm - 7.00pm

Lara Goodband Curator

Thursday 14 July / 6.00pm - 7.00pm

Ruth Levene

in conversation with Liz Sharp from Pennine
Water Group, University of Sheffield

Thursday 21 July / 6.00pm - 7.00pm

Nicola Dale

Thursday 28 July / 6.00pm - 7.00pm

Clare Charnley

Thursday 4 August / 6.00pm - 7.00pm

All artists talks are in Zebedee's Yard,
Whitefriargate, Hull, HU1 2EX and are free
admission, though booking is recommended
at www.hullboxoffice.co.uk

Exhibition Sponsors



The Green Port Hull vision is to establish Hull and the East Riding as a world class centre for renewable energy. Hull City & East Riding Councils, ABP and the University of Hull have been working together to ensure this vision becomes reality.

The Siemens investment is just the catalyst, with the renewable energy sector being the single biggest influence on the local economy for generations.

www.greenporthull.co.uk



BAE Systems is one of the world's largest defence companies, with approximately 83,400 employees spread across the globe, serving customers across the air, land, maritime and national security domains. The Brough site is part of the air sector, and was established in 1916 by aviation pioneer, Robert Blackburn. To this day Brough's 1,000 employees have wide-ranging capabilities in design, development, manufacture and support of fast jet aircraft.



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amyjohnsonfestival.co.uk



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