

ART & SCIENCE

AN EXHIBITION TO PROVOKE DEBATE & DISCUSSION

Susan Aldworth
Annie Cattrell
Oron Catts
Katharine Dowson
Andrew Krasnow
David Marron
Helen Pynor
Nina Sellars
Anaïs Tondeur
Richard Wingate
Ken + Julia Yonetani
Jonat Zurr



ART & SCIENCE

a group exhibition

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Frances Sampayo

Introduction

The polymathic artworks of this exhibition are conscious aesthetic creations which challenge and question our preconceptions about the Art & Science movement and the inter-disciplinary relationship held between these two discourses. These works of Art & Science are not simply illustrative of science, but instigate creative dialogues between arts, sciences and new technologies to present the viewer with a complex subject and narrative. The visual language and conversations instigated by such works reinterpret the representation of ideas and facts, provoking contemplative thought within the viewer through an often powerfully emotive, and human narrative.

The Art & Science movement is currently developing at a frantic pace, mimetic of the society from which it is produced. This exhibition, *Art & Science*, takes a moment to bring together a collective of thirteen international artists working at the forefront of this movement to provoke discussion and debate into the fundamental nature of Art & Science.

The exhibition begins with one of the most important pieces of BioArt, *Pig Wings*. This work by the Tissue Culture and Art Project, founded by Oron Catts and Ionat Zurr, photographically documents the outcomes of the collaborative project to grow three sets of wings from pig stem cells. The artistic merit of BioArt can all too easily be dismissed however, this work from the conception of the project to the manner in which the artwork is shaped are entirely motivated by aesthetics. The groundbreaking venture is reflected in the jewelled tones of each set of wings, uniting the importance of the work in science and BioArt through this rich tactile imagery. The wings themselves have been designed to grow in three distinct styles to reflect different states: 'evil' takes the form of bat wings, 'neutrality' the chimeras, and 'good' takes the shape of angel wings. The relationship generated in this work between creative process, science, philosophy, morality and aesthetic design harmonise in producing a great work of Art & Science which typifies the duality of work in this movement.

The redefinition of materials seemingly unrelated to artistic practise to convey a concept is an important aspect explored by some areas of Art & Science. Krasnow approaches his practise through the repurposing of materials to comment upon social and political issues. His employment of human tissue in his sculptural creations has provoked controversy and repeatedly called into question the ethics of working with bio-tissue and organic matters outside of the scientific community, and their display within a cultural context. *Defaced* (Bank Note), is a work of BioArt produced using human skin, which in this instance, has been taken from the artists lower back. This deeply personal artwork is exhibited for the first time at GV Art gallery as part of the *Art & Science* exhibition. Produced as a reactionary piece against the involvement of the United States in overseas warfare between 1991 and 2003, the questions which arise from using this material to form the work are deeply important within the context of contemporary society. The narrative established between the materiality of the piece and its form as a 'defaced' dollar bill ask the viewer to consider, how much is a human life worth? What is it that makes a person worth more than another? What is the cost of a human life?

Materiality itself is essential to the work of Ken + Julia Yonetani who focus the narrative of *Pillar with Fruit Bowl* on environmental issues surrounding the nature of food production and waste. Taken from the series 'Still Life: The Food Bowl' this collaborative project is composed of a series of salt works all reimagining the materials properties of sculpture, replacing conventional constituents of sculpture such as clay, marble or bronze with Mildura River salt. As this salt is a waste product, drawn from the ground to make the land more fertile for agriculture, Ken + Julia highlight the new potential purposes of this material. In achieving this, they would succeed in positively impacting the landscape surrounding Mildura turning a waste product into something practical, such as a building material. Ken + Julia make a beautiful work of art cast from the practise of still life, creating an opulent display from a product theoretically made from waste.

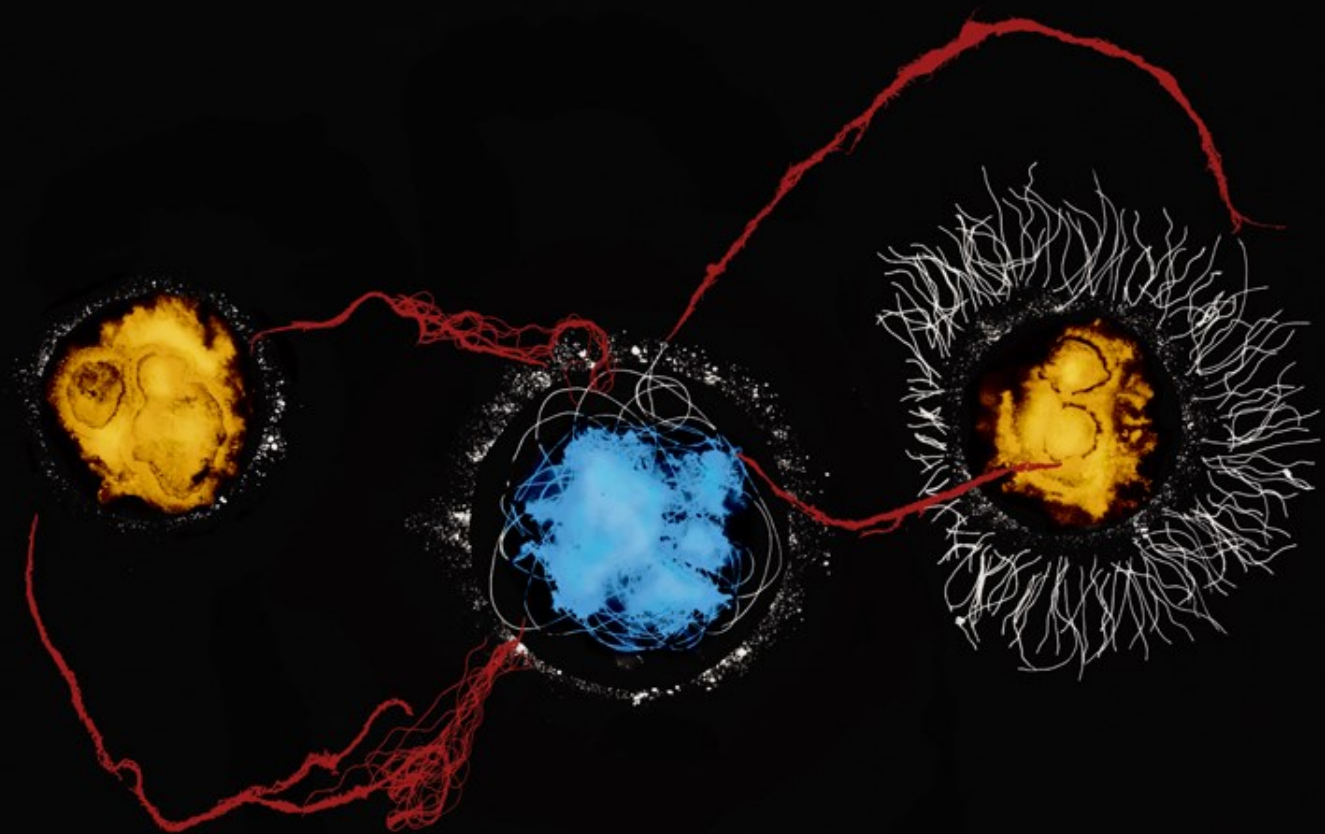
From the employment of materials outside of the sculptural tradition to make traditional objects, we now look at one of the most well established canons is repurposed for the Art & Science movement through its content. Due to advancements in imaging technologies, such as MRI scans, it is now possible to see the human body internally and in response artists have proceeded to create works concerned with this new visual subject matter. Resulting in deeply biographic works which narrate a moment caught in the life of an individual. Although these

works thematically share properties with the self-portrait and portraiture in that they are studies of the self, their content is wholly unlike any previously associated with this genre.

Encoding/Decoding the Body by Nina Sellars presents the viewer with a meticulous and precise illustration of the artist. An image of the *brachial plexus?* arches and twists its way over the page, leading the eye to a still from the brain scans Sellars received in order to treat a brain tumour she was diagnosed with at the age of 16. The artist internal it establishes a dialogue surrounding the nature of an individual. It then fuses with contemporary technologies to further progress the narrative of the piece. The drawn QR code invites the viewer to see an animation of the brain scans from which the still is drawn. Opening not only a moment within the life of the artist, but an emotional response to the brain in a contained and scientific context.

Katherine Dowson's *My Soul* again presents you with an image of the artist internally. Formed from a laser-etched three dimensional representation of the brain scans Katharine received whilst collaborating with scientists researching dyslexia. The title questions the notion of what it is that makes a person, what it which encapsulates the essence of an individual? Is it the face, the eyes through which we see the world, the heart? These portraits which act outside the established modes of portraiture raise philosophical questions and explore the modern practises of medical science.

The portraiture of Art & Science is not solely internal, as expressed by *Patient 19* and the *Vanitas* series of works by Dowson. These glass works are cast from the plaster moulds taken of patients about to receive chemotherapy treatment for cancers. Whilst medical purposes cast a plastic cover from the original plaster cast to place over the patient during treatment, Dowson takes the plaster cast to discover the portrait of a person in a position of great vulnerability. *Memory of a Brain Malformation*, too portrays an individual in a moment of great fragility, yet it focuses on the condition itself, removing any recognisable trace of an individual. In doing so it allows the viewer to become immersed ourselves in the emotion provoked by this memory. These works also establishes a rhetoric between the instruments used to help save the lives of these patients, and the creation of the artworks themselves. With the casts used to aid chemotherapy, and *Memory of a Brain Malformation* carved into the glass using a laser, just as the tumour it depicts was removed using laser therapy. There is a duality in almost



Susan Aldworth, *Heartbeat 3*, lenticular, 2010

every aspect of Katherine's practise, her works are haunting and beautiful, enchanting and dangerous, fragile and strong, Art & Science. From images taken for scientific purposes both Dowson and Sellars create works of the human condition which through their visual components resonate emotionally within all of us.

Our understanding of the human condition cannot solely be shaped by articles and published information. Although this information will undoubtedly shape our knowledge and intellect, the questions of what it is human cannot be answered by information alone. Through Art & Science collaborations however, we are presented with layered narratives which can help to elaborate upon pure information. David Marron's sculptural piece *Human Flailings* comments upon the body's largest organ, skin. Shaped by his everyday experiences as a paramedic, the medical element of Marron's work are unveiled through a multi-layered narrative, much like the process of diagnosis is achieved through the analysis of individual components which present themselves as symptoms. In this piece concerned with skin we are presented with the act of the skin being flayed. This event present in classical texts and mythology is highlighted through a collage of mythological images. Our personal relationship with our skin is one which often leaves much to be desired, and flickering from the base of the painting a UV light symbolises something both necessary to life, and something harnessed by humanity for vanity, which can cause great harm. The artwork looks at nature of skin through a wider lens taking in conditions and the treatment of skin from multiple perspectives. From the act of torture onto the torturing symptoms of skin conditions, a tortured figure writhes out of the floor of the work, agonisingly twisting.

Susan Aldworth in *Dreaming Voices 3 & 4* looks not to the symptomatic conditions of illness, but her work is instead a pulsating representation of schizophrenia itself.

The frantic and uncontrollable energy shoots across the image. This mental illness frantically tears its way across both the representation of the physical brain and the unconscious within one's self. White wisps cut through the blue foundation of the work appearing with destructive flashes of lightening. The energetic pulsations which cut across the *Dreaming Voices* series are physically established through Aldworth's lenticular work. *Heartbeats 3*. Composed from a great number of images spliced together using an artistic method dating back to the early 1900's to narrate the sequence of a heartbeat from above, the artwork is constantly altering to

reflect the perspective of the viewer. Although these artworks may not present us with what it is to suffer from schizophrenia or skin conditions in the same manner of Dowson's work, they present a documentation of these conditions as if presenting a visual scientific paper with an audience willing to understand.

The exploration of the human condition opens a vast expanse of avenues for an artist to consider. The artworks of Helen Pynor featured in *Art & Science* concern themselves with a sense of place, and the landscape in which we situate our lives. Pynor's *Milk Series* & *Liquid Ground* artworks are captured moments of perfect serenity, with the colour cascading across background appearing in harmony. The *Milk* series were produced in Pynor's native Australia. They explore the biology of the land through the medicinal properties of plants, as used by the native Australian community. The photographs are used to form a composite image and identify the biological specimen and their medicinal properties as if stored in a laboratory or chemists cupboard – 'Banksia - Unsettled Children', 'Paperbark -Headaches'. The *Liquid Ground* series are composed through the same composite layering of photography. Yet the narrate Helen's exploration of her new residency, London.

Flat Hemispheres by Anaïs Tondeur again uses sequential images to propose a scientific narrative. This artwork takes us through six stages of the predicted collision between our galaxy and Andromeda. Through working with physicists Tondeur creates an artwork representative of a cataclysmic event. Each of this set of three artworks reveals two chapters in this cosmic event, the first being usurped by an image which only reveals itself once the lights are off. This second hidden image is reflective of the nature of this event itself.

The swirling patterns of colour which billow in the background of these works are perhaps mimetic of Tondeur's second work on display in *Art & Science*. The Herbarium present a layered narrative to the viewer through the composite layering of imagery, and the use of multiple images within a single work. In the Herbarium her work reverses the events of the Chernobyl nuclear disaster. The plants documented are studies of species which have grown in the area in the twenty year as following the accidental nuclear explosion on this site. Tondeur now removes these species and places them in the same environment twenty years ago, the over-exposure achieved through photographic method recalling the effects of the explosion.

The final exhibits are those of scientist, Richard Wingate. The inclusion of his scientific illustrations raise questions as to the make-up of works of art-science. Does straight scientific illustration fall into this category? For many the answer to this would be yes. One set of his illustrations have been framed, the other pinned on the wall. Decide.

Despite the collaborative discipline having been ever present in the world of art, with one having the potential to argue that it is due to chemical reactions that one has the materials to produce art with, since the beginning of modern humankind- there has been little to no authoritative voice on the art and science movement and what it is to create work in this field. As opposed to other established movements which have been distinctively classified by genre and sub divided into progressive aspects of the movement. The current growth and speed of this movement have made defining it difficult as it offers so many areas.

Frances Sampayo
Art Historian
London, 2013



Helen Pynor, *Liquid Ground 5* (detail), C-type photographic print on glass, 2008

Susan Aldworth

Artist Statement

Dreaming Voices 3 & 4 are part of *Reassembling the Self*, the result of an interdisciplinary collaboration between the artist Susan Aldworth and neuroscientists and clinicians at the Institute of Neuroscience at Newcastle University. Aldworth was appointed as Artist in Residence at the Institute in 2010 where she worked very closely with neuroscientists Dr Fiona le Beau and Professor Miles Whittington, scientists, clinicians and people with a schizophrenia diagnosis. Schizophrenia is a complex disorder characterized by positive symptoms (delusions, hallucinations), negative symptoms (withdrawal, apathy), disorganized speech and thinking, and underlying cognitive deficits in memory, attention and cognitive flexibility. The causes of schizophrenia have not been fully elucidated, but it is recognized that multiple genes combine to confer a vulnerability to schizophrenia. Contributing environmental factors appear to include prenatal stressors (infection, hypoxia and malnutrition), childhood trauma, living in an urban environment and a disintegrated society and the use of cannabis and stimulant drugs. The scientific understanding of the links between these causal factors, brain processes and the symptoms of schizophrenia is improving but this enhanced knowledge has not been adequately communicated to the media or the public. The result is that the negative stereotype of people with schizophrenia remains unchallenged.

Centred in a study of the condition of schizophrenia, the project wove together art, science, psychiatry and individual histories in an exploration of self, perception and the fragility of human identity. It culminated in the exhibition 'Reassembling the Self', an exhibition on two sites, the Hatton Gallery and Vane in Newcastle upon Tyne, curated by Aldworth. During her residency at Newcastle University, in 2011 Aldworth was awarded an Arts Council Grant to work with the legendary Stanley Jones at Curwen Studio in Cambridge. Stanley has worked with all the great British artists since the studio was set up in 1958, including Henry Moore, Liz Frink, Paula Reago and David Hockney. Stanley felt that lithography would offer Aldworth new directions for her work. The Curwen lithographs challenge the sense of identity through their radically dislocated imagery, emotionally charged colour and mysteriously ephemeral marks.

These are dramatic, powerful works in which science, philosophy, physiology and imagination locate an essential human experience in schizophrenia. They immerse us in the fundamental, Sisyphean human activity of reassembling our fragmented selves. Aldworth was clear that her work would not be about the experience of schizophrenia – that would be explained better by the two artists with schizophrenia that she was working with. She wanted to make portraits of schizophrenia itself.

Julia Beaumont-Jones from Tate Britain writes in her catalogue essay:

"Aldworth's response to her subject is bold and disarming. They reflect on the general condition of schizophrenia. As anti-portraits, their use of found imagery – generic anatomical prints from medical folios, the ear as a visual shorthand for schizophrenia and hearing voices – at once interrogates individual identity and situates individual consciousness within a provocatively depersonalized symbolism. These powerful, graphical emblems act as cognitive short-cuts in the construction of a collective experience whose condition we are invited to reassemble. They ask: What is schizophrenia? Is it situated in the brain? What does it tell us about ourselves?"

"Stanley and I decided to take this concept further. Why don't you, like Dr Frankenstein, reassemble someone? The reassembled anatomy is a metaphor for the pain and difficulty of having schizophrenia when you feel that your self is being stolen away from you by your own anatomy. The relationship between the physical brain and your sense of self in this context is very complicated. This is where process becomes my muse to further develop these ideas and to more fully explore the possibilities of lithography. *Dreaming Voices 3 & 4* explore how hearing voices in your head, hearing a number of negative and threatening voices as in schizophrenia, can change both who you are and how you are perceived." Susan Aldworth, 2012.

Susan Aldworth

Biography

Susan Aldworth lives and works in London. She studied philosophy at Nottingham University and printmaking at Sir John Cass in London. Aldworth is Senior Research Associate at Swansea Metropolitan University and lectures at Norwich University of the Arts. Aldworth is currently Artist in Residence at the Institute of Neuroscience at Newcastle University where she developed and curated the acclaimed exhibition 'Reassembling the Self' at Hatton Gallery and Vane in 2012.

Aldworth's practice has included exhibitions, residencies and commissions, internationally. Her work is held in many public and private collections including the V&A, the British Museum, The Wellcome Collection Library (UK) and Williams College Museum of Contemporary Art (USA). Working as an artist-in-residence in a medical or scientific setting is central to Aldworth's practice, which explores the different personal, medical and scientific narratives that revolve around human identity.

Three portraits of people with epilepsy will be shown as Susan Aldworth: The Portrait Anatomised at the National Portrait Gallery, London from 7 March - 1 September 2013. Susan is currently working on several projects including an exploration of genetic coding with Stanley Jones at the Curwen Studio on suite of stone lithographs, and with master printer Nigel Oxley on some experimental etchings. These works will be previewed in Susan Aldworth: a Reassemblage at GV Art in June 2013. Her series of lenticular prints Transition 1-5 will be shown at the Science Museum, London in September 2013.

Aldworth is a regular broadcaster on BBC radio including The Print Master (2012) and The Portrait Anatomised (2011).



Susan Aldworth, *Dreaming Voices 3 (detail)*, lithograph, 2012

Annie Cattrell

Artist Statement

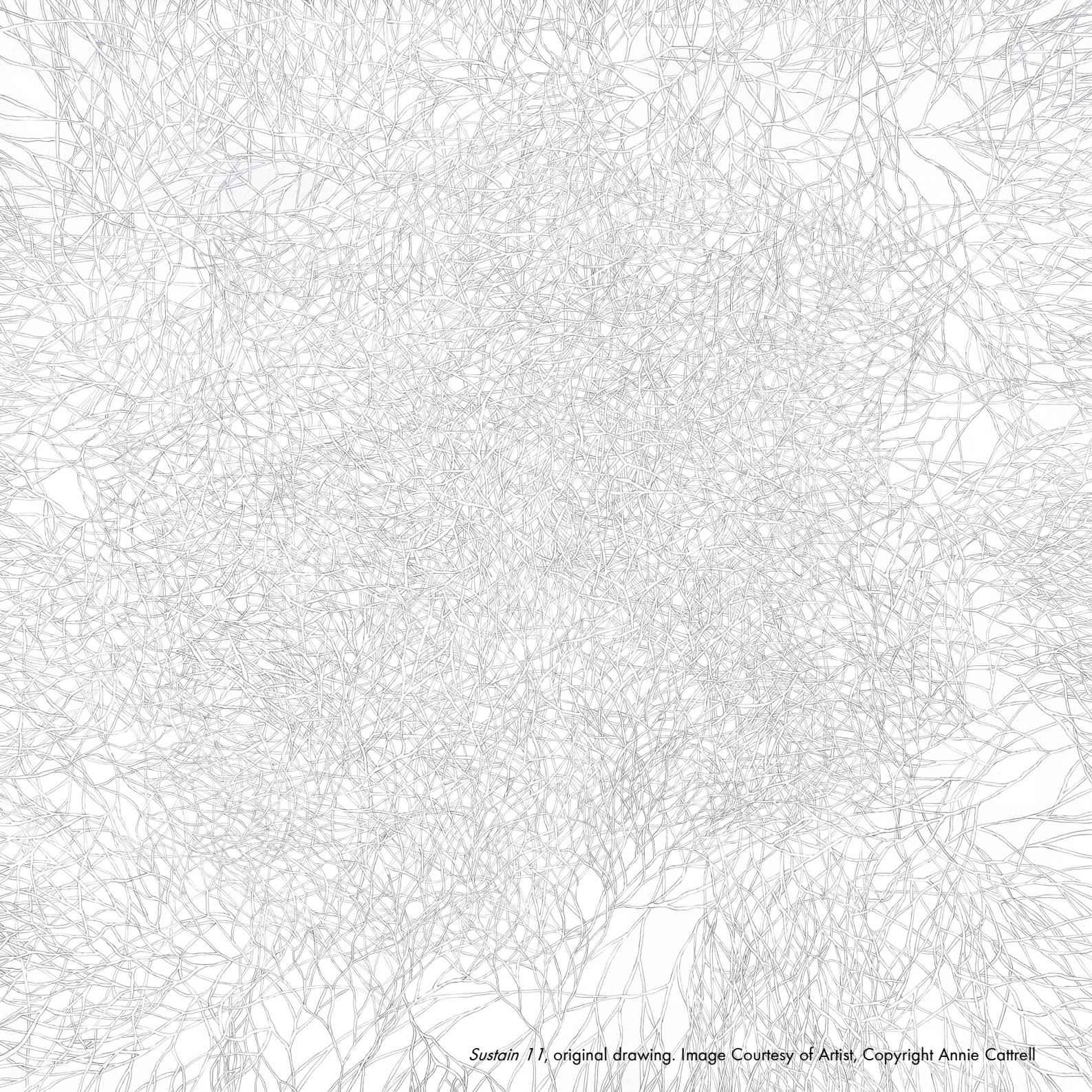
Steven Connor comments on Annie Cattrell's artistic practice:

Annie Cattrell's works seem to be drawn towards an indeterminate zone where the exact and the fragile converge, at the point at the heart of every state of being at which there seems to be some tremor, some fading, flicker or deflection from itself. To be sure, her works are often characterised by a high-resolution, pinprick-sharp exactitude. They seem to offer the precision that we expect of perfectly-adjusted apparatus, in which form and function, appearance and effect, are locked tightly together, with neither residue nor deficit.

Annie Cattrell's drawings play variations on the processes of variation, the rippled striations of *Pressure* and the interlaced tendrils of *Sustain* instituting for example a shimmering quiver between plane and depth. Their titles hint at material processes, lifting, pouring, parting, rather than the forms of matter that effect them or that they affect. Annie Cattrell's art not only attends closely to processes of variation within each piece of work, the works themselves enact variations across and between each other. The title of *Process* establishes an interchange between the alimentary process it figures and the process required to make it, as though it were in some sense figuring its own workings, a machine made to make itself.

The world of forms she patiently tracks is one that never quite becomes one or comes back to itself, in which the formative principle is endlessly branching and budding off.

Annie Cattrell is drawn and detained by secret, hidden, normally inaccessible spaces and forms, especially parts of the body which we not only rarely see, but of which can also form no real continuous conception. But these forms are not merely inward. They have the quality that Gilles Deleuze called 'increscence'. They bloat and blister, but inwards as well as outwards,



Sustain 11, original drawing. Image Courtesy of Artist, Copyright Annie Cattrell

turning into, rolling over on themselves, delving inwards into the inner space they themselves scoop out.

Anne Cattrell's works are a serenely seething contour map of prepositions, out, back, on, in, through, along, beside. Mystical materialists like Teilhard de Chardin have evoked a kind of awareness in introversion, as though an energy that turned towards itself rather than jetting out and away were all that were required for consciousness to stir, whether in the coiling of the molecule, or the slow wheelings of galaxies. But Anne Cattrell's forms seem to have a kind of consciousness without self-consciousness. This is why there can sometimes seem to be a kind of fungal horror in this obese blooming, amid all its delicacy; we recoil from the blind, shoving nescience of what seems to teem without limit or plan, a becoming-other that wants to become everything and to go everywhere, making everything itself, making itself everything, yet without ever quite coming back to what it is.

Annie Cattrell

Biography

Cattrell was born in Glasgow and studied Fine Art at Glasgow School of Art, University of Ulster and at the Royal College of Art. She is Senior Research Fellow in Sculpture at De Montfort University in Leicester and has recently completed a residency hosted by the Pier Centre in Orkney and working in part with scientists from Herriot Watt University who are involved with research into renewable energy using wave power.

Cattrell's practice as a fine artist is at times informed by working with specialists in neuroscience, meteorology, engineering, psychiatry and the history of science etc. This cross-disciplinary approach has enabled her to learn about cutting edge research and in depth information in these fields. She is particularly interested in the parallels that can be drawn within these approaches in both art and science.

This is the sixth group show at GV Art gallery, London of which Annie has been a part. Cattrell has exhibited widely nationally and internationally including: Carbon 12, EDF Foundation, Paris; Out of the Ordinary at the V and A in London; Hybrid, MIC Auckland; Medicine and Art (imaging the future for life and love) Mori Museum, Tokyo; Not Nothing, curated by MUKA, Antwerp; Invisible Worlds at Freiburg Kunstverein, Germany; The Body, Art and Science, National Museum in Stockholm; Paper Cuts, Fredericke Taylor Gallery, New York. Her solo exhibitions include the Anne Faggionato Gallery (London), The Faraday Museum at the Royal Institution (London) and Berwick Gymnasium Gallery, Berwick upon Tweed. Her work is held in numerous high profile institutions and many private collections.

Cattrell has recently undertaken a number of commissions including the Forest of Dean Sculpture Trail and at the award winning new Bio-chemistry Department at Oxford University designed by Hawkins Brown architects. In 2008 she jointly won the international Bombay Sapphire prize.

Katharine Dowson

Artist Statement

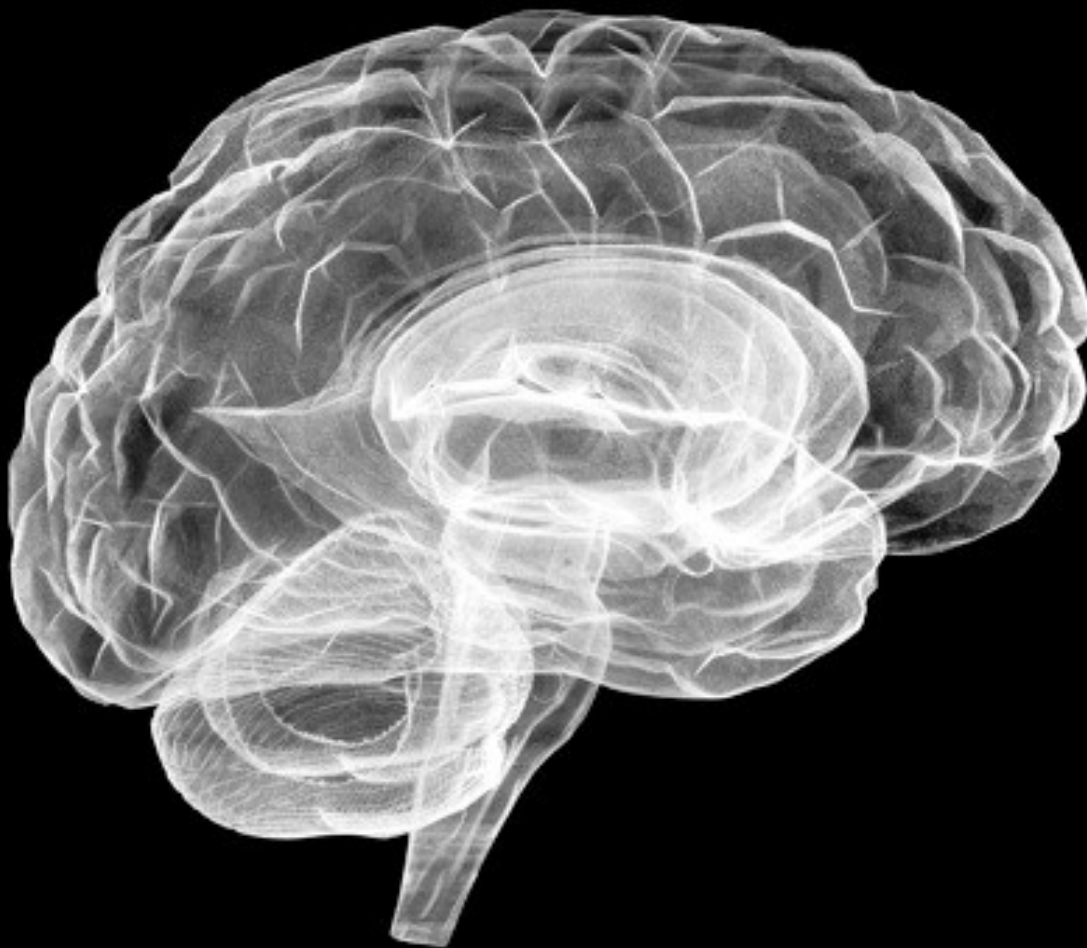
Katharine Dowson creates her artworks using various materials, primarily glass and transparent materials. The materials used by Katharine become a metaphor for a membrane, a fragile yet robust skin that allows light to pass through and reveal the hidden interior of the work.

The transient quality of glass and its ephemeral beauty, on the one side, and the dangerous cutting quality on the other, ideally suits the language of science, as in, the beauty of discovery and the possible dangers found within. Many scientific instruments, from test tubes to lenses are made of glass. Its inert structure and malleable qualities have for centuries been the material at the forefront of scientific investigation.

Katharine has collaborated with scientists researching Dyslexia. Following on from this collaborative venture into the brain, Dowson has produced work which explores the workings and problems of the Brain more fully. *My Soul* was produced from the FMRI scans Katharine received as part of this research into Dyslexia. It is a to scale representation of her brain presented as a three dimensional image etched into glass.

Currently Dowson is collaborating with a Hospital mould technician who takes the impressions of patients that need to have Radiotherapy for the treatment of cancer. The cast is taken of the isolated area where the patient has cancer, their head, face, and other body parts. Once these impressions have fulfilled their medical function, Katharine then casts these original plaster casts, into glass. Enabling you, the viewer, to see through the head and into the mind of the patient. The fragility of the glass is emotive for the patient's state of mind in venerable and frightening circumstances. Both *Patient 19* and the *Vanitas* series have been produced as a result of this collaboration and these glass works each possess a feeling of suspended time and a memory of the moment.

"Science asks questions about life and as artists we try to do the same" Katharine Dowson, 2012.



Katharine Dowson, *My Soul*, 3d laser etched glass, 2005



Katharine Dowson

Biography

Katharine Dowson studied sculpture at the Royal College of Art. Her work has been exhibited in London, the USA, Brazil, Europe and Asia. Collections include The Wellcome Trust, The Arts Council Collection, Cultura Englesa, Brazil, The Ulster Museum, Belfast Aberdeen Art Gallery, The Institute of Neuroscience Newcastle University and Private Collections. Her work was bought by Charles Saatchi and is included in the publication 'Shark Infested Water, Saatchi Collection of British Art in the 90s'.

Dowson was commissioned to create work for the groundbreaking shows, Spectacular Bodies, A History of Anatomical Art from Leonardo to Now at The Hayward Gallery, London and Head On: Art with the Brain in Mind at the Science Museum for the Wellcome Trust.

More recently, her work has been in Gregor Mendel, Planting the Seeds of Genetics, USA touring Exhibition; The Glass Delusion, UK National Glass Centre; Seeing Heads Hatton Gallery Newcastle; solo show Mitosis, Newcastle; and GV Art London exhibitions Experiments, Brainstorm and her 2010 solo show Relics of the Mind. Between, 2011-2012 her work has been in Images of the Mind/The Mind in Images, Dresden and Brno.

Andrew Krasnow

Artist Statement

Defaced (Bank Note) is from a collection of works made from human skin that bookend the years leading up to the first Gulf War under George H.W. Bush and ending with the second Gulf War initiated by George W. Bush, 1991 - 2003. Opposed to war and its cost in human life, Krasnow first incorporated human skin asking Americans to question the certainty of right and wrong and resist blind allegiance to the state. After being censored at the height of the first Gulf War the artist began adding pieces of his own skin to each work.

Defaced will remain "price-less" and never be bought or sold. In contradicting the medium of money it has been made to represent, the work sets a standard for "resistance value" consistent with human worth.

As with the desecration of the US flag, the defacement of US currency is an issue. It is therefore quite possible that *Defaced* could be perceived as blatant disregard for U.S. statutes governing defacement of currency.

Please find below the US law that pertains to the defacement of currency.

"Defacement of currency is a violation of Title 18, Section 333 of the United States Code. Under this provision, currency defacement is generally defined as follows: Whoever mutilates, cuts, disfigures, perforates, unites or cements together, or does any other thing to any bank bill, draft, note, or other evidence of debt issued by any national banking association, Federal Reserve Bank, or Federal Reserve System, with intent to render such item(s) unfit to be reissued, shall be fined not more than \$100 or imprisoned not more than six months, or both."

Andrew Krasnow

Biography

Andrew Krasnow's work embraces a wide spectrum of media and content, overlaid with the complexities of living in a world in which nothing can be seen in isolation. In creating intersections between disciplines, approaches and contexts that aren't easily conjoined, his work offers provocative reconsiderations of the role art has in culture, science and philosophy. *Core Texts of the Mind*, 1988, a breath-activated installation consisting of five human brains toting brass icons that rise on crests of water, is one such example.

His group exhibitions include the prescient exhibit *Drowned World* on global warming at P.S.1, the mechanical retrospective *Mechanika* at the Contemporary Art Center of Cincinnati, and the expansive survey of the American flag in contemporary art *Old Glory*, at the Phoenix Museum of Art. Prior to the changes in its grant criteria, The National Endowment for the Arts fully funded the staging of his massive biological installation, *Growth* (1991). Solo shows include Stux Gallery, NY, ADM Projects, LA and GV Art gallery, London.

In recent years, Krasnow has given way to a more sombre concern for humanity and the world it is consigning itself to. Deeply personal and profoundly iconic, these works are a compendium of history and politics, layers of symbolism not easily unwound. Often, this instils a tension between occupation and observation in the illusory search for self, most notably with his use of human tissue. As a result, he has been no stranger to the extremes of censorship and moral outrage.



Andrew Krasnow, *Defaced* (Bank Note), human skin, cotton & linen

David Marron

Artist Statement

Human Flailings is a wall hanging sculpture that considers the cause and consequence of physical trauma toward the skin.

The piece initially dwells upon an acute form of inhumanity, the extraordinarily brutal act of flaying (of being skinned). It recognises the unfortunate historical and mythological recipients – the judge Sisames, Saint Bartholomew, the Greek Marsyas and the Aztec god Xipe Totec.

The narrative then layers, touching upon a traumatic exposure to sunlight and conversely its bodily necessity. The chemical importance of ultraviolet sun rays upon the skin in activating molecules to produce vitamin D. This is contrasted with overexposure of ultraviolet rays (including the vanity of sunbeds), inflicting burns and skin cancer: basal/squamous cell carcinoma and melanoma. Citing basic medical treatment and possible disfigurement.

The central figure within the sculpture readily exhibits physical scarring, but also carries the enduring vulnerability of a victim. A pain that sporadically twists into damaged vents of outward hostility then settling to acceptance: the prison like patience of sufferance. The damaged detractor.

It is a work that harbours extremes – the adverse bipolar of human behaviour and consequence.



David Marron, *Human Flailing* (detail), Mixed Media, 2010

David Marron

Biography

David Marron is a London based artist, and currently divides his time between his art practice and his work as a paramedic. He studied at Chelsea College of Art and Design, receiving a BA (hons) in 1996.

Medicine permeates the art works Marron makes. A haphazard amalgam of experiences diluted from time spent as a paramedic. Generalised recurrent themes appear to be the human condition, a detached physiology, pathogens, violence, treatment and transience. Imagining art with magnetic properties, appropriating relevant material from differing subjects. Collisions and collusions to damage and reconstruct.

Helen Pynor

Artist Statement

The *Milk* and *Liquid Ground* series both emerged from extensive research into the tangled narratives of the human body and social histories.

The *Milk* series takes as its starting point plant medicinal remedies of the Dharawal people, traditional owners of the southern Sydney and Illawarra region of New South Wales. Based on an extended conversation with botanist and Dharawal man John Lennis, the work encapsulates Pynor's emerging realisation that the plants she'd grown up with and grown to love had deeper meanings and histories, that were largely obliterated in contemporary Australian society.

It was a revelation that these plants were entangled in other practices taking place on her doorstep, a realisation that cemented another level of the connection felt by Pynor to the landscape, flora and fauna of Sydney.

It also highlighted the extent to which plants and human bodies engage in their own extended conversations, and have done for thousands of years across many or all human cultures. The resonance between the molecules contained within plants and their capacity to induce healing processes when in contact with the molecules of human and animal bodies is something that continues to fascinate Helen.

On another level, *Milk* pays homage to the value and importance of eclectic medical practices, Western and non-Western, and their ongoing survival and evolution.

The *Liquid Ground* series also helped to develop the connection between Helen and place, this time in her new home of London. The series had its origins in research that Pynor undertook in the newspaper archives of the British Library specifically, research into reports of accidental drownings in the Thames.

However the work evolved a broader meaning through conversing with physiologists interested in 'extreme physiology' such as Prof. Michael Shattock at King's College London and



Helen Pynor, *Milk 8 (banksia)* detail, C-type photographic print on glass, 2008



paper bark
headaches

Helen Pynor, *Milk 9 (paperbark)* detail, C-type photographic print on glass, 2008

Prof. Michael Tipton at the University of Portsmouth. Through these conversations Pynor learnt more about the physiology of drowning and eventually reached a more metaphoric reading of the body and its relationship to water.

Liquid Ground expresses her interest in the habitation of the human body in water. Whilst the organs in these works are uncannily 'out-of-place' they also inhabit their watery environment quite seamlessly, mirroring the watery milieu of our interior bodies. More broadly Helen is interested in the multiple levels at which we resonate with water – biochemically, phylogenetically, amniotically, at sensate levels, in tragedy, and in the worlds of our imaginations, sometimes as an alternative to air-borne living.

Helen Pynor wishes to thank the Dharawal Elders and people, and John Lennis, for information on Dharawal medicinal practices used in the *Milk* project.

Helen Pynor

Biography

Helen Pynor's practice spans installation, photography, sculpture, video, media art and performance. Pynor holds a Bachelor of Science (Hons, Macquarie University), a Bachelor of Visual Arts (Sydney College of the Arts), and a recently completed practice-based PhD from Sydney College of the Arts, University of Sydney. Drawing on her dual backgrounds she has explored the materiality of the human body in relation to its culturally constructed nature, and explored possibilities for re-imagining the interior human body.

Pynor has exhibited widely in Australia and Europe, most recently in solo exhibitions at The Australian Centre for Photography (Sydney), GV Art gallery (London), Dominik Mersch Gallery (Sydney), Performance Space (Sydney, with Peta Clancy), and Leonardo Electronic Almanac (with Peta Clancy). Recent group exhibitions include Science Gallery (Dublin), The OK Center for Contemporary Art (Linz, Austria), The Wellcome Collection (London), Bargehouse (London) and The Powerhouse Museum (Sydney).

In 2012 Pynor was awarded an Honorary Mention in the Hybrid Arts Category of Prix Ars Electronica for her collaborative work with Peta Clancy *The Body is a Big Place* and she has received national awards in Australia including the RBS Emerging Artist Award (2009) and The Josephine Ulrick and Win Schubert Photography Award (jointly, 2008).

In the course of her solo and collaborative research Pynor has undertaken residencies at The Heart and Lung Transplant Unit, St Vincent's Hospital (Sydney), SymbioticA (Perth), Performance Space (Sydney), A.R.T. (Tokyo), The Australia Council Studio (London), Monash University (Melbourne), Sydney College of the Arts (The University of Sydney), Ecole Nationale Supérieure des Beaux-Arts (Paris), and the Department of Adolescent Medicine, The Children's Hospital at Westmead (Sydney).

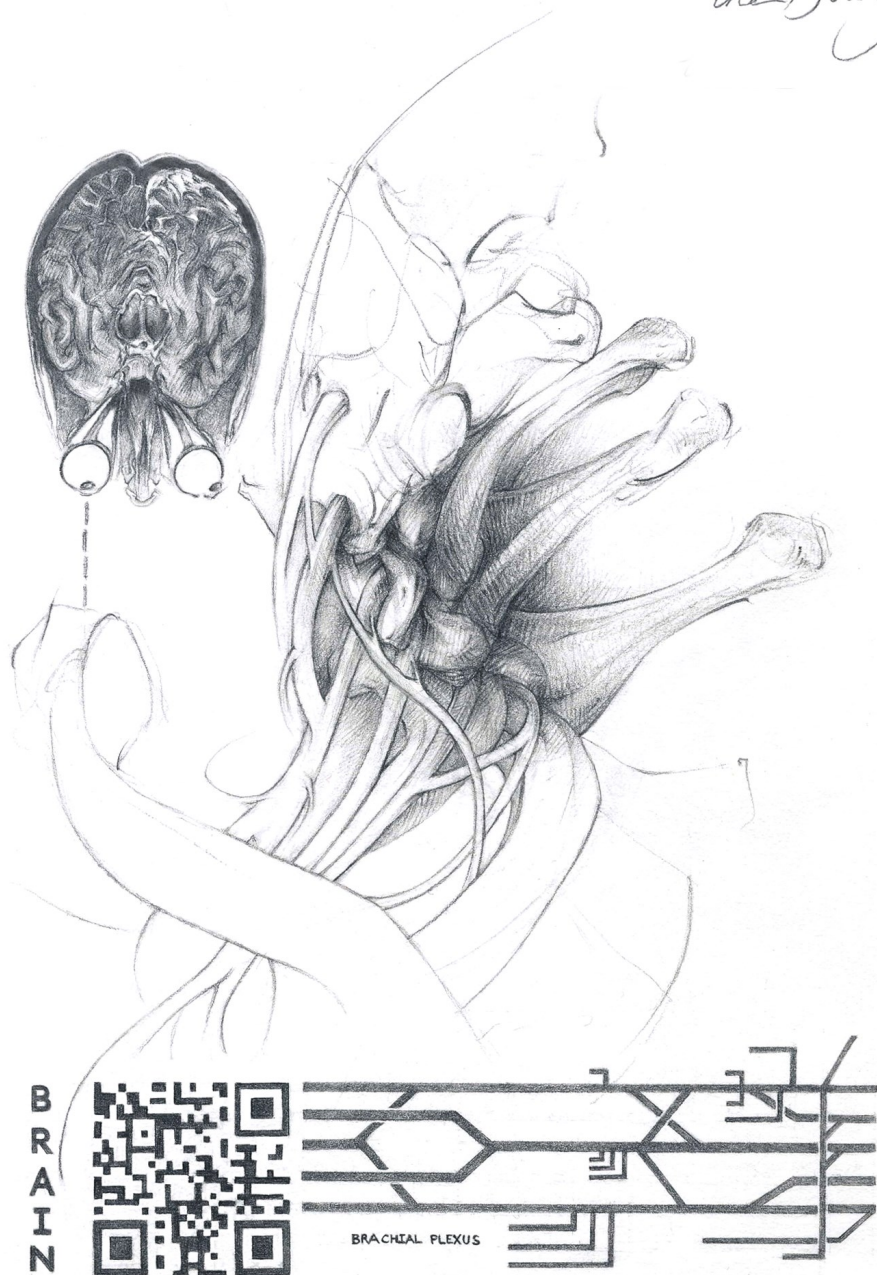
Nina Sellars

Artist Statement

Encoding/Decoding the Body is a page from the artist's journal. The page displays a selection of her ideas and associations about the conveyance of anatomical knowledge. Essentially, it is a playful and poetic mix of imaging modalities.

The images include: a hand-drawn QR code that acts as a hyperlink to an online animation; a small intimate self-portrait, of sorts, with the drawing based on an MRI scan of the artist's brain; a classically inspired drawing that shows the nerves of the brachial plexus as they descend from the spine and travel under the clavicle; the brachial plexus translated into a diagrammatic representation; sight depicted as a broken line.

Encoding / Decoding
the Body. 2012.



Nina Sellars

Nina Sellars, *Encoding-Decoding the Body*, Graphite on Paper, 2012

Nina Sellars

Biography

Sellars' artwork explores the influence of anatomical knowledge on our understanding of the body, identity and subjectivity. Classically trained in drawing, her artwork is now based in multimedia light installations. Sellars' interest in anatomy has taken her from working in wet anatomy labs to working in physics labs, where she explores the cultural implications of clinical imaging modalities. Sellars lectures in Anatomical Drawing and is a trained Prosector (dissector of cadavers for medical display) and her work is shown nationally and internationally.

Anaïs Tondeur

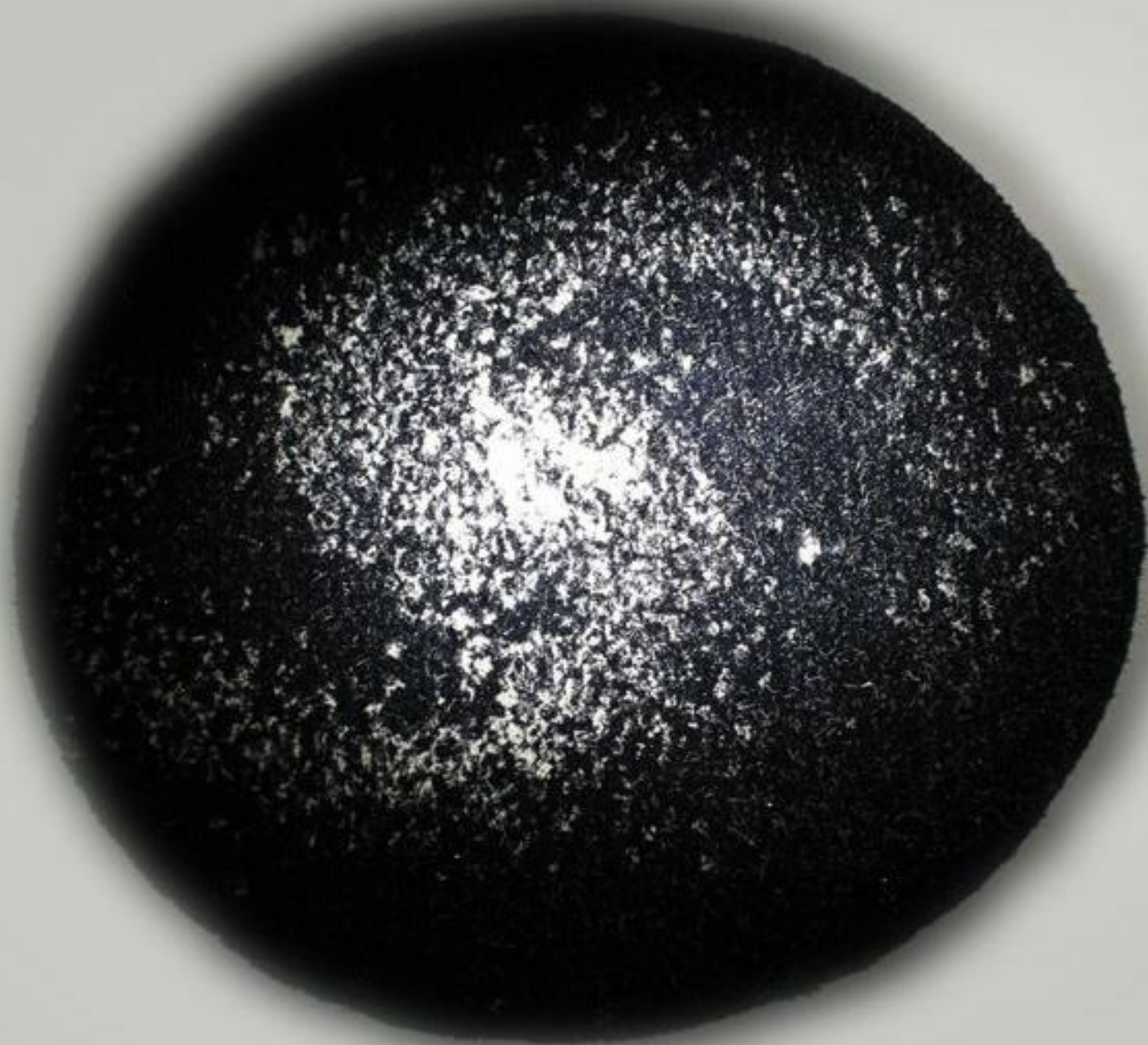
Statement – Flat Hemispheres

Carried by the expansion of the Universe, every single galaxy is speeding away from us. There is one notable exception, the Andromeda galaxy is moving towards us at a rate of 120km/s. A billion years from now, our home galaxy and its nearest neighbour will begin the lengthy process of merging together. Their collision will drastically alter the structure of both galaxies and spawn into a new city of stars.

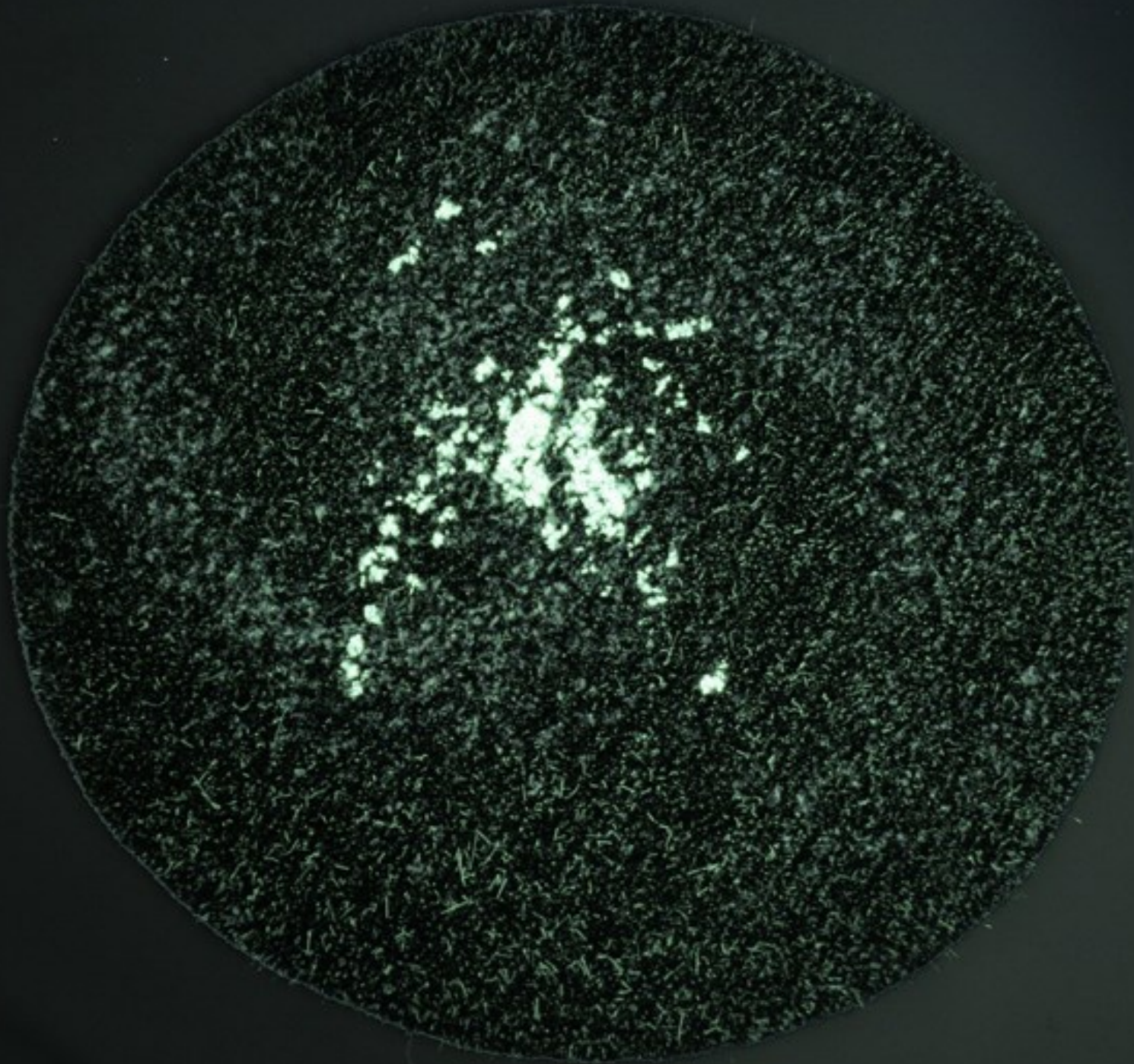
The *Flat Hemispheres* installation maps in a series of phases the position of the Sun during the merger between the Milky Way and Andromeda. Based on a scenario envisaged by T. J. Cox and Avi Loeb, astrophysicists at the Harvard Smithsonian Centre, this installation is created as a journey within time and space that immerses the viewer in fugitive encounters with the concluding scenes of our galaxy.

The installation is composed of six ink drawings and three light interactive tufted maps. The interactivity of the textile surfaces was the research subject of an artist-in-residence at the Audax Textile Museum in Netherlands. Anaïs Tondeur combined the use of photo-luminescent fibres with a semi-artisanal technique of carpet making: tufting. This technique implies to follow with a hand pistol the drawn lines on a canvas to blow loops of yarns within it. It results in refined and detailed patterns. It creates a depth of the surface, a materiality of the image and invites to immerse within it.

This association between astronomy and tufting was inspired by the principle of heterotopias. At the difference of a utopia, a heterotopia is capable of juxtaposing in a single real place, several spaces that are in themselves incompatible. In 'Of Other Spaces' (1967) Foucault sets in parallel the heterotopias of the first carpets and of the Persian garden. This garden was a sacred space conceived to draw together four parts representing the four realms of the world.



Anaïs Tondeur, *Flat Hemisphere*, In the light & In the dark, 2011



Anaïs Tondeur, *Flat Hemisphere*, In the light & In the dark, 2011

Carpets were originally reproductions of gardens. "The garden is a rug onto which the whole world comes to enact its symbolic perfection, and the rug is a sort of garden that can move across space. The garden is the smallest parcel of the world and then it is the totality of the world". As an address to the far destiny of our galaxy, this installation opens onto the infinite.

With special thanks to Frank Teurlings and Hester Onijs for the tufting production at the Textiel Lab of Audax Textile Museum, Netherlands and Patricio Retamal for the pictures of the drawings.

Anaïs Tondeur

Statement- Herbarium of Surviving Species from the Exclusion Zone

Herbarium of surviving specimens from the Exclusion zone.

Location: Exclusion Zone, Chernobyl, Ukraine

Radiation level: 1.7 microsieverts per hour

Photogram, C-print on RAG Paper, (x9) 43cm/33cm

The Chernobyl nuclear accident occurred on Saturday April 26th 1986, at 1:23:58 a.m. local time. When the Reactor No.4 exploded, a plume of radioactive fallout was emitted into the atmosphere and drifted across the then Western Soviet Union and Europe.

Twenty-five years after the accident the thirty kilometres of exclusion zone surrounding Chernobyl nuclear plant is now being re-opened and reveals itself as an opulent place for wildlife.

The *Herbarium of Surviving Specimens from the Exclusion Zone* is based on the research undertaken into plant genetics by Institute of Plant Genetics and Biotechnology at Slovak Academy of Sciences and examines the traumas endured by the flora in these areas of high radiation. It holds a particular interest in the Lineacea specie. Seeds of this specie have been planted in the irradiated dirt near the meltdown site to aid tests researching the impact of the radiation on flora.

The imprints of the specimens are caught through a photogram process. This technique mirrors the effect of the extreme exposure of light that the atomic bomb emits on explosion, evident in the imprinted shadows left on the land after the 1945 Hiroshima bomb. With this series of blurred and distorted plant silhouettes, Tondeur interrogates the impact of traumatic high nuclear radiation on the flora. The photogram technique uses light as a source to record and archive trauma on the specie just as the atomic bomb has illuminated and scarred the mind.



Specie: *Linum usitatissimum*



Specie: *Linum usitatissimum*



Specie: *Phaseoleae*



Specie: *Byrsonima lucida*



Specie: *Linum usitatissimum*



Specie: *Geranium chinum*



Specie: *Dolichos pruriens*



Specie: *Linum usitatissimum*



Specie: *Fabaceae*

Anaïs Tondeur

Biography

Anaïs Tondeur is a visual artist who lives and works between Paris and London. She gained a Masters in Mixed Media at the Royal College of Art in 2010 after completing a Bachelor in Textile design at Central Saint Martin's School, London in 2008.

Her art practice draws on an exploration of the interface between science and art, perception and cognition, fact and fiction. Through a pluri-disciplinary practice including drawing, early photographic techniques, installation and new media art, her work stems from a fascination of the history of ideas: the attempts of our civilisations to understand the mystery of the living, endow our existence with a meaning and elaborate a comprehensive view of the universe.

Playing with techniques of spectator's participation, she questions the influence of a narrative, material and embodied experience when encountering an object of knowledge. She explores the ways through which the elements and entities that stand beyond direct observations are understood, perceived, imagined and visualised. She focuses her research on elements that lay below ground, stand at the confine of space or in the invisible realms that surround us. To this end, she collaborates with scientists in the fields of geology, physics, or engineering in both collaborative and consultative roles.

She also engages in collaboration with composers, writers and artists, including the International Art Collective, Art in Touch and the Royal Opera of Wallonia in Belgium.

Her practice has included artist residencies in Netherlands and North of France. Her work has been presented in solo exhibitions in Paris and London and group exhibitions shown nationally and internationally.

She has been awarded in 2012 the Arcadi Bursary Awards for digital arts.

Ken + Julia Yonetani

Artist Statement

From ancient Mesopotamia over four thousand years ago to present-day Australia, salinity has posed a major problem for civilisations throughout history. Along the Murray-Darling basin, known as Australia's 'food bowl' as it produces up to 90 per cent of Australia's domestic fresh food, 550 000 tonnes of salt is pumped out of the ground every year to try and stem the increasing rise of highly saline groundwater.

Pillar with Fruit Bowl is made from this salt. A result of many months of experimentation, the work is a unique combination of pure Australian groundwater salts. The stark white salt work links up with historical associations of salt—as a powerful, sacred substance that maintains life by enabling food preservation, but also induces the death of ecosystems and the collapse of empires. The work resonates in the past and the present, of the rise and fall of civilisations throughout history, and of the issues of environmental decline and food security that face us today.



Ken + Julia Yonetani, *Pillar with Fruit Bowl*, 2010

Ken + Julia

Biography

As previous representatives of Australia at the Venice Biennale (2009), Ken + Julia Yonetani's art installations have attracted international acclaim and widespread attention to environmental issues. Ken holds a PhD in Visual Arts from the University of Sydney, and Julia a PhD in History from Australian National University.

Ken + Julia Yonetani have been collaborating on projects since 2009. Their latest works, *Crystal Palace: The Great Exhibition of The works of Industry of All Nuclear Nations*, and *What the Birds Knew*, were shown in solo shows at 4a Centre for Contemporary Asian Art and Arterreal Gallery in Sydney late in 2012, and featured on national and international news programs. Prior to this, part of this work was also shown at NKV, Wiesbaden, Germany. Their previous work, *Still Life: The Food Bowl*, was exhibited at Arterreal Gallery, Sydney and Palimpsest #8: Collaborators and Saboteurs, Mildura.

In 2011 they had a large survey show, *Sense of Taste*, of key works at GV Art gallery, London. As well as exhibiting internationally, they conducted residencies in Finland and Portugal, funded by the Kone Foundation and Australia Council for the Arts. They have exhibited and carried out residencies throughout Australia, often working in collaboration with scientists. In the second half of 2013 they will undertake a residency at ZK/U, Berlin. They are represented by Arterreal Gallery, Sydney and GV Art gallery, London.

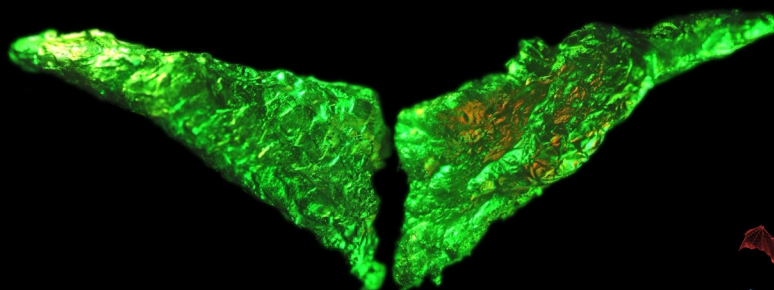
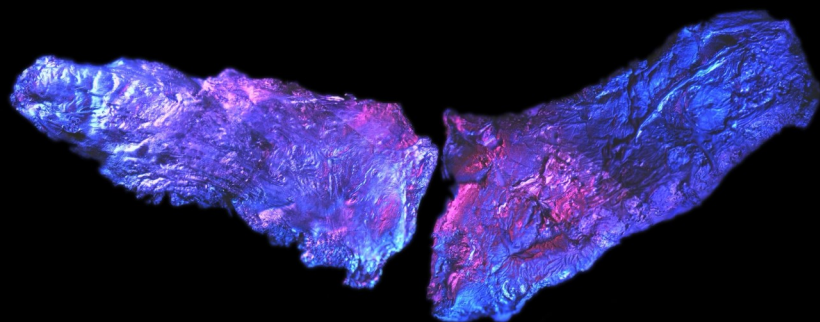
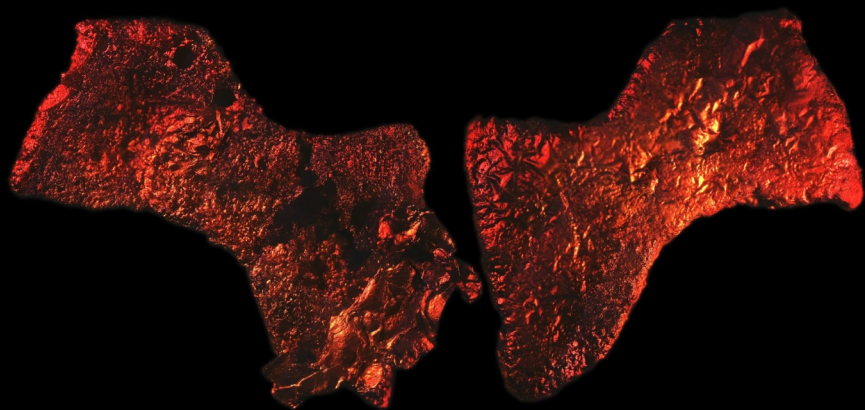
The Tissue Culture & Art Project

Artist Statement

Pig Wings documents the Pig Wings installation presenting the first ever wing shaped objects grown using living pig tissue, through photography. The *Pig Wings* project was developed in 2000-2001 during a residency in Doctor Joseph Vacanti's Tissue Engineering and Organ Fabrication Laboratory, Massachusetts General Hospital, Harvard Medical School. Three sets of wings made out of pig mesenchymal cells (bone marrow stem cells) were grown over/into biodegradable/bioabsorbable polymers (PGA, P4HB). The wings size is 4 cm x 2 cm x 0.5 cm each, and they were grown for approximately nine months inside a rotary cell culture bioreactor. The original wings are coated with gold and kept in jewellery boxes.

Advances in bio-medical technologies such as tissue engineering, xenotransplantation, and genomics promise to render the living body as a malleable mass. The rhetoric used by private and public developers as well as the media have created public anticipation for less than realistic outcomes. The full effects of these powerful technologies on the body and society have been, in most cases, only superficially discussed.

Winged bodies (both animal and human) have been used in most cultures and throughout history. Usually, the kind of wings represented the creature (chimeras) as either good/angelic (bird-wing) or evil/satanic (bat-wing). There is yet another solution to flight in vertebrates which seems to be mostly free of cultural values - that of the pterosaurs. We have used tissue engineering and stem cell technologies in order to grow pig bone tissue in the shape of these three sets of wings.



The Tissue Culture & Art Project, *Pig Wings*, giclee print, 2000-2002

The Tissue Culture & Art Project

Biography—Oron Catts

Oron Catts was born in Finland, and is currently working in Western Australia. Oron is an artist, researcher and a curator at the forefront of the emerging field of Biological-arts, whose work addresses shifting perceptions of life. He trained in product design and specialized in the future interaction of design and biological derived technologies BA, (first Class Honours), and Visual Art (MA). Oron is the Co-founder & Director of SymbioticA.

In 1996, he co-founded the Tissue Culture and Art Project to explore the use of tissue technologies as a medium for artistic expression. In 2000, he co-founded SymbioticA, The Centre of Excellence in Biological Arts School of Anatomy and Human Biology The University of Western Australia, an artistic research laboratory within a biological science department. SymbioticA became a Centre of Excellence in 2008 and has a thriving residency, academic and workshops programme.

In April 2009 he was acknowledged by Icon Magazine (UK) as one of the top 20 Designers 'making the future and transforming the way we work'. His work received international awards and recognition including the inaugural Prix Ars Electronica Golden Nica in Hybrid Art in 2007, the 2008 WA Premier Award and The Second Prize in the VIDA10. His work is in the MoMA design collection (New York) and has been exhibited internationally. Catts has published 13 book chapters and numerous articles.

The Tissue Culture & Art Project

Biography— Ionat Zurr

Dr. Ionat Zurr was born in England and is currently working and living in Western Australia. As an Artist, researcher and a curator alongside her position as the Academic Coordinator of SymbioticA – The Centre of Excellence in Biological Arts, School of Anatomy and Human Biology, the University of Western Australia.

Ionat together with Oron Catts formed the internationally renowned Tissue Culture and Art Project. She has been an artist in residence in the School of Anatomy and Human Biology since 1996 and was central to the establishment of SymbioticA in 2000. Ionat is considered a pioneer in the field of biological arts and her research has been published widely, exhibited internationally and her artwork has been collected by MoMA (New York). In 2009, Ionat was listed by the Icon Magazine (UK) as one of the Top 20 Designers 'making the future and transforming the way we work'

Ionat has been a fellow in the InStem Institute, NCBS, Bangalore (2010) and a visiting scholar at The Experimental Art Centre, Stanford University (2007) and The Tissue Engineering & Organ Fabrication Laboratory, Massachusetts General Hospital, Harvard Medical School (2000-2001). She exhibited in places such as the MoMA, New York, Mori Museum, Tokyo, Ars Electronica, Linz, GOMA Brisbane and more.

Richard Wingate

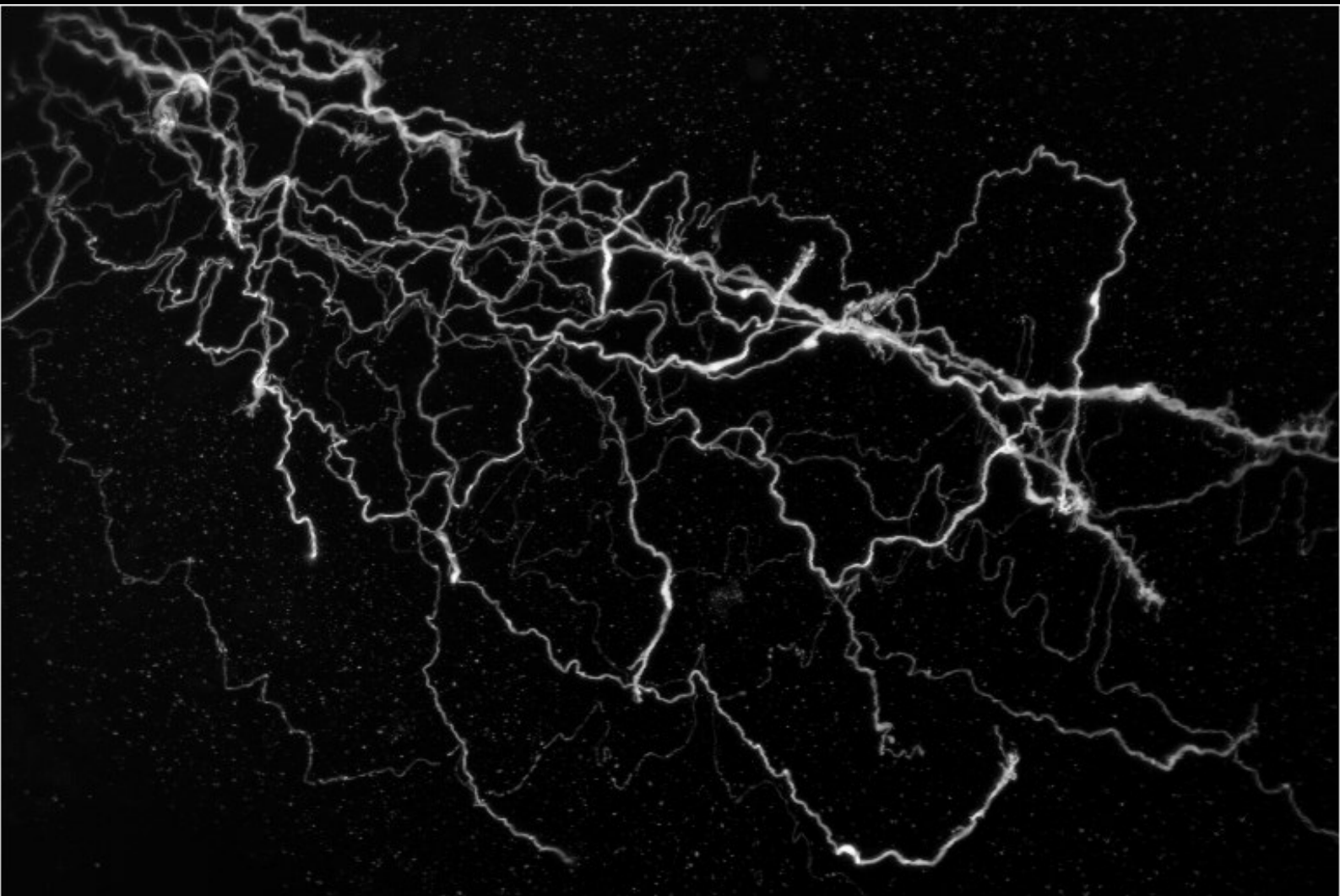
On Collaborations with Artists

While scientific experiments are, by design, testable and falsifiable, the models and their hypotheses that drive research are one-step removed from the bench and the research paper. The invisible framework of the scientific research lies in informal discussion, whiteboard scribbles and notes pinned to the laboratory wall. This domain of science has been described as a “multimedia” discourse with visual communication dominating in the representation of thought. The visual culture of science at this theoretical level is not only subject to, but explicitly dependent on the interchange of influences, ideas and motivations with other visual cultures. This is also the realm where the interaction between science and art comes to the fore as a potent tool of discovery.

My own journey at the interface between these two disciplines began in 2002, when I teamed up with artist Andrew Carnie on a Art & Science collaboration. We had been drawn together by an interest in neuronal form and the collaboration fostered by a common palette of computer-based image rendering that promoted a close technical interchange. Carnie developed two installation works, *Magic Forest* and *Complex Brain*, exploring the relationship between neuronal form and developmental processes.

The relative international success and longevity of *Magic Forest*, in particular, seems at first to imply that this collaboration appeared to have hit on a winning, conventional formula of images and presentation. Visually, the nature of research provided the perfect marriage for Carnie’s interest in the fragility and complexity of branching forms. The overall impression of each work reflected the construction of form and from suspended fragments of evidence in both a technical and conceptual sense. However, in the process of the discussions that formed these works it also became clear that concepts and language beyond the artwork were more justly the shared objects of artistic and scientific analysis. Terms such as migration, destiny, fate, death and birth were key to both Carnie’s work and the essential language of brain development. Is it possible for the powerful emotive associations in their artistic context to be

stripped away when transferred into science? If not, it seemed likely that the vocabulary of brain development had invested the informal models of research with a distinct narrative of motives and emotion. The dialogue at the heart of this collaboration was not so much an interchange between scientist and artist but a process of science and art interrogating each other's basic assumptions and practice. On reflection, it may be that it is this energy – the drive of interrogation and challenge – that is found in the most enduring interactions between science and art.



Richard Wingate

Biography

Richard Wingate is a neuroscientist and lecturer at King's College London in the MRC Centre for Developmental Neurobiology. His laboratory studies the development and evolution of hindbrain and cerebellum networks and is funded by the Wellcome Trust, BBSRC and Royal Society. Richard is also active engaged in teaching research in neuroanatomy and is a Fellow of the Higher Education Academy. After undergraduate study in Biology at Manchester University, Richard completed his DPhil in neuroscience at Oxford University. Subsequently, he held MRC and Wellcome Trust research fellowships at Guy's Hospital, the Rockefeller University, New York and King's College London.

He has long-standing collaborations with the artist Andrew Carnie and art historian, Marius Kwint, through which they have explored the visual culture of the brain and neuron through articles, exhibitions and art work. Richard has been a member of Pulse, Production and Arts panels for the Wellcome Trust and was the scientific advisor for the recent Wellcome Collection exhibition: "Brains".

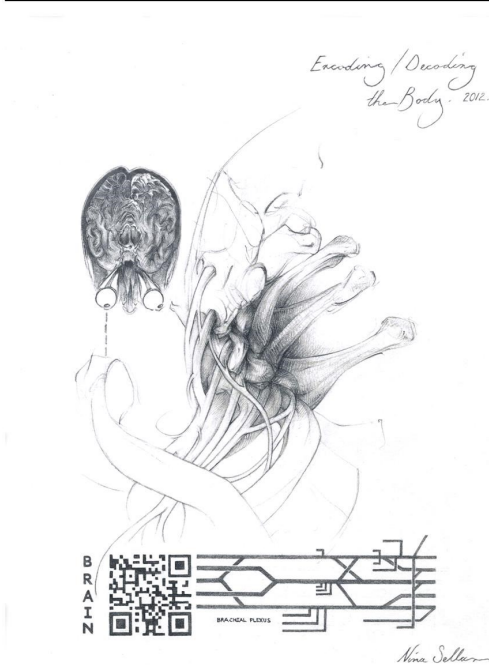
ART & SCIENCE:

An exhibition to provoke debate & discussion



A future for Art & Science Interactions?

Debate Thursday 14 March, 7–8.30pm




Encoding/Decoding the Body, Nina Sellars Graphite on Paper, 2012

Panellists: Marius Kwint (chair), Kat Austen, Oron Catts, Robert Devcic, Arthur Miller & Anaïs Tondeur

With contributors from scientific and artistic backgrounds this debate will question the contemporary position of the art & science practice and its future within the cultural landscape.

To be part of the worldwide participation in this discussion you can watch the debate as it is live streamed via the GV Art website: www.gvart.co.uk or follow the conversations of our panel via the live twitter feed. Questions can be proposed to the panel via Twitter, so no matter where you are in the world, you can take part in this topical debate.

 @GV_Art or #artandscience

RSVP to info@gvart.co.uk

GV Art, 49 Chiltern Street, London, W1U 6LY

T : 020 8408 9800 | E : info@gvart.co.uk | W : www.gvart.co.uk

Gallery open Tuesday to Friday 11am - 6pm, Saturday 11am - 4pm, Admission Free



THE ART & SCIENCE DEBATE

Thursday 14 March

This debate will explore the relationship between art & science which is the foundation of this now celebrated movement. With contributors from scientific and artistic backgrounds this debate will question the contemporary position of this practice and its place within the current cultural landscape.

Throughout the exhibition questionnaires will be available both online and at the gallery. The responses to this will additionally aid the shape of the debate by proposing a wide scope of questions. The debate itself will be live streamed via the GV Art website allowing for worldwide participation in this discussion.

After the opening position statements by the panellists there will be a chance for all audiences to put their own questions forward to the panel to keep the debate going.

Summary of the Debate

GV Art gallery has garnered a reputation as a convivial focus for interdisciplinary discussions and events in recent years, and much of this spirit was evident in an evening debate on 17th March that brought together a distinguished panel and audience of commentators, educators and practitioners in the field of art-science interactions. The agenda was to outline how the future might look and be achieved, and to go beyond celebrating the merits of interdisciplinary work to determine aims and means for sustaining the field—if that is desirable. As GV Art director Robert Devcic pointed out, art-science has been a vastly burgeoning area over the past five years, but is this merely a bubble, perhaps to be left to burst, or is it to be further established? Other questions follow. Should major cultural institutions and galleries and museums take more of an interest in this area, to say nothing of politicians and government departments? How can and do artists working in this area earn a living? What are the commercial prospects for the field, and the potential customers? What are its implications for

educational curricula, whence many of the disciplinary divisions now being overcome arise?

Chaired by Marius Kwint, guest curator of the Wellcome Collection exhibition *Brains: the Mind as Matter*, the panellists were Kat Austen, editor of the *New Scientist's* CultureLab section and also an artist (and previously an environmental chemist); Oron Catts, co-founder of the SymbioticA artistic research centre at the University of Western Australia and visiting professor at Aalto University in Helsinki; Anaïs Tondeur, an artist represented by GV Art, working with the history of scientific ideas and recently graduated from the Royal College of Art; and Arthur I. Miller, emeritus professor of the history and philosophy of science at University College, whose forthcoming book, *The New Avant-Garde: Dispatches from the Edge of Art and Science* is based on numerous interviews with leading researchers and practitioners.

Each panel member was asked to make a brief 'position statement' and to develop the discussion a little before exchanging questions, comments and answers with the audience. Austen stressed the potential democratization and intermingling of previously specialist fields of knowledge thanks to internet technology. Catts argued that art was simply about life, and that the trend towards art and science interactions merely reflected the fact that many of the most instrumental changes going on were in the biotechnologies, so artists were interested in those. Artists were thus exploiting scientists. Devcic made a plea for trust and free dialogue between the two sides of the art and science divide, and that institutions should support this by avoiding predetermined outcomes and schemes that are almost designed to fail through inadequate funding. For Tondeur, taking a Kantian view, art enabled one to grasp not only universal truths, but also the changing ideas that constituted them. Miller then set out his argument that there was an emerging 'third culture' (as opposed to C. P. Snow's 1950s coining of 'two cultures' to describe the gulf between arts and sciences); it was already operative in what might be called the 'media arts' produced by places such as MIT Media Lab, and was also incipient in the aesthetic predilections of some leading scientists.

There was, then, a polarity between Catts on the one hand, who argued for the autonomy of the artist and that science here was just another, albeit absorbing, subject-area, and others, including Miller, who advocated potential interdisciplinary fusions on a more or less equal footing—though examples of truly combined creativity, almost everyone agreed, were rare (amounting to no more than 2% of all such initiatives, according to one audience member). The latter were probably in the majority among the audience, though Catts' artistic realpolitik

was nevertheless compelling and well received. Comments and contributions (which outnumbered the questions) from an expert audience were informative and well put, advancing the discussion smartly towards its objective of considering the economic future. They introduced international comparisons of the growing scene (with China and India now reported to be taking active interest in the field, and pre-eminence in the USA, but little activity so far in Africa); concluding topics dwelt on the so-far unrealized promise of merging art and science to create a new post-industrial revolution to create wealth and rival the achievements of British eighteenth and nineteenth-century forebears; and the equally elusive role of education, parliament and major museums in sponsoring these developments. One guest argued that doing art as quasi-scientific research, and hence to be paid a salary or at least a grant, enabled her to escape the obligation to sell her artworks (and the consensus was that commerce in the area was so far limited). The cultural health of a society, Catts contended, can be gauged by the extent and depth of frivolous activities that it supports. Whether the interaction of art and science is still regarded as frivolous in fifty years' time, or has become the basis of economic policy and industrial strategy, we are yet to determine.

A video of the full event (1 hr 23 mins) can be viewed at <http://vimeo.com/62408132>

Marius Kwint

June 2013

Contributors Biographies

Dr Marius Kwint

Dr Marius Kwint is Senior Lecturer in Visual Culture at the University of Portsmouth. He graduated in Cultural History from the University of Aberdeen and took his D.Phil. in History at Magdalen College, University of Oxford, writing his thesis on the English circus in the eighteenth and nineteenth centuries. He was previously lecturer in History of Art at Oxford University, where he was a fellow of St. Catherine's College, and he has held research

fellowships at the Houghton Library, Harvard University and at the Royal College of Art and Victoria and Albert Museum, London.

Marius was recently Guest Curator, with Lucy Shanahan, of the Wellcome Collection exhibition Brains: the Mind as Matter, which is due to tour to Manchester this year

@mariuskwint

Dr. Kat Austen

Kat is a person. She's interested in lots of things and phenomena, how things are connected, and why they are connected. She likes patterns but doesn't have to have them.

In the temporal melting-pot of her life so far she has been a scientist, an artist, a journalist and a writer. She writes on art, science-art, culture, science and history of science, and edits New Scientist's CultureLab section. A practising artist and researcher, Kat was previously an environmental chemist at the University of Cambridge.

Kat is passionate about justice and respect (and cool digital technologies that help promote these). She welcomes a humane and environmentally kind future.

@katausten

www.newscientist.com/blogs/culturelab

Oron Catts

Oron Catts is an artist, researcher and curator whose pioneering work with the Tissue Culture and Art Project, which he established in 1996, is considered a leading biological art undertaking. He is the founding Director of SymbioticA (since 2000), an artistic research centre at The University of Western Australia and winner of the Prix Ars Electronica Golden Nica in Hybrid Art. Selected in Thames & Hudson's '60 Innovators Shaping our Creative Future', Oron's work reaches beyond the confines of art, often being cited as an inspiration in areas as diverse as new materials, textiles, design, architecture, ethics, fiction and food.

Recently Catts set up a biological art lab called BiofiliA - Base for Biological Art and Design, at the School of Art, Design and Architecture, Aalto University, Helsinki, where he is a Visiting

Professor, and was a Visiting Professor of Design Interaction, Royal College of Arts, London 2009-2012.

@OronCatts

www.tcaproject.org

Robert Devcic

Robert Devcic is the founder and director of GV Art gallery, London. GV Art is the UK's leading and only contemporary art gallery dedicated to promoting art & science and in particular interdisciplinary dialogues that encourage new creative processes. He is also an agent for a number of artists and has curated exhibitions at GV Art & other venues since 2005.

@GV_Art

www.gvart.co.uk

Arthur I. Miller

Arthur I. Miller is emeritus professor of history and philosophy of science at University College London. He is fascinated by the nature of creative thinking and, in particular, creativity in art and in science. What are the similarities, what are the differences? His books include *137: Jung, Pauli, and the Pursuit of a Scientific Obsession*; *Insights of Genius*; and *Einstein, Picasso*, nominated for the Pulitzer Prize. His forthcoming book is *The New Avant-Garde: Dispatches from the Edge of Art and Science*. He co-curated the show *Art & Science: Merging Art & Science to Make a Revolutionary New Art Movement* at GV Art gallery in London. The free e-catalogue for this exhibition is available through the GV Art website.

@ArthurIMiller

www.arthurimiller.com

Anaïs Tondeur

Anaïs Tondeur is a visual artist, her artistic practise draws on an exploration of the interface between science and art, perception and cognition, fact and fiction. Through a pluri-disciplinary practice including drawing, early techniques of photography, installation and new media art, her work stems from a fascination by the history of ideas: the attempts of our civilisations to understand the mystery of the living, endow our existence with a meaning and elaborate a comprehensive view of the universe. Anaïs Tondeur gained a Masters in Mixed Media at the Royal College of Art in 2010 after completing a Bachelor in Textile design at Central Saint Martin's School, London in 2008. In 2012 she was awarded the Arcadi Bursary Awards for digital arts.

@AnaisTondeur

www.anais-tondeur.com

List of Exhibits

No.	Description
1.	The Tissue Culture & Art Project (Oron Catts and Ionat Zurr), <i>Pig Wings</i> , giclee print, 2000-2002, 113 x 90 cm. Edition of 20.
2.	Helen Pynor, <i>Milk 8 (Banksia)</i> , C-type photographic print, face-mounted on glass, 2008, 100 x 66 cm Edition 4 of 5.
3.	Helen Pynor, <i>Milk 9 (Paperback)</i> , C-type photographic print, face-mounted on glass, 2008, 100 x 66 cm Edition 1 of 5.
4.	Helen Pynor, <i>Liquid Ground 5</i> , C-type photographic print, face-mounted on glass, 2008, 100 x 68 cm Edition 2 of 5.
5.	Andrew Krasnow, <i>Defaced (Bank Note)</i> , human skin, cotton and linen, 8 x 19 cm
6.	Nina Sellars, <i>Encoding/ Decoding the Body</i> , graphite on paper, 2012, 20 x 15 cm The pencil drawn QR code can be scanned using a QR Code supporting device
7.	Susan Aldworth, <i>Heartbeat 3</i> , 2010, Lenticular, 51 x 71 cm Edition 1/70
8.	Katharine Dowson, <i>My Soul</i> , 2005, 3D laser etched glass Edition 4 of 6.
9.	Katharine Dowson, <i>Patient 19</i> , glass Series 1 of 3.
10.	Annie Cattrell, <i>Sustain II</i> , Print on paper, 78 x 78 unframed Edition 3 of 10
11.	Anaïs Tondeur, <i>Flat Hemispheres 1</i> , 2011, tufting, wool, bamboo, silk and glow in the dark yarn, variable sizes

12. Anaïs Tondeur, *Herbarium of surviving specimens from the Exclusion zone*, 2011, C-Print on RAG paper, 43 x 33 cm
Edition 1 of 10.
Specie: Linum Usitatissimum
Specie: Dolichos pruriens
Specie: Linum Strictum
Specie: Linum Usitatissimum
Specie: Phaseoleae
Specie: Linum Strictum
Specie: Fabaceae
Specie: Geranium Chinum
Specie: Linum Usitatissimum
13. Katharine Dowson, *Vanitas*, 2010, glass, dimensions variable
Each is a series of 3
Vanitas 2
Vanitas 3
Vanitas 4
Vanitas 5
14. Katharine Dowson, *Memory of a Brain Malformation*, 2006, 3D laser etched glass, 14 x 23 x 9.5 cm
Series 3 of 5
15. Ken + Julia Yonetani, *Pillar with Fruit Bowl*, Mildura river salt, 2010, dimensions variable
Edition 3 of 3
16. Susan Aldworth, *Dreaming of Voices 3*, 2012, lithograph produced at Curwen Studios with Stanley Jones, 86 x 60 cm
Edition 2 of 15
17. David Marron, *Human Flailing*, 2010, mixed media, 150 x 200 cm
18. Susan Aldworth, *Dreaming of Voices 4*, 2012, lithograph produced at the Curwen Studios with Stanley Jones, 86 x 60 cm
Edition 2 of 15
19. Richard Wingate, a series of illustrations & drawings, mixed media on paper
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Contributors Biographies

Robert Devcic

Robert Devcic is the founder and Director of GV Art, London. Since 2005, Robert has been working as a collaborator to curate art & science experiences by working with versatile artists whose creativity is sparked by scientists and multidisciplinary approaches.

Robert is working to establish GV Art as a new model for a contemporary art gallery, which aims to explore and acknowledge the inter-relationship between art and science.

Frances Sampayo

Frances Sampayo studied history of art, at the University of York, and specialises in British art of the eighteenth century. She has contributed to the programme of events at York Art Gallery on graphic culture in eighteenth century London. Following this event, she was invited to participate in York Art Gallery's online version of the exhibition *William Etty: Art & Controversy*. Sampayo has also worked with the Foundling Museum, London, researching their collection of portraits and delivering a series of talks on her findings. She is currently part of the team at GV Art, London.

GV Art gallery, London

Is a contemporary art gallery which aims to explore and acknowledge the inter-relationship between art and science, and how the areas cross over and inform one another. The gallery produces exhibitions and events that create a dialogue focused on how modern man interprets and understands the advances in both areas and how an overlap in the technological and the creative, the medical and the historical are paving the way for new aesthetic sensibilities to develop.

ART and SCIENCE

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Page 37, Anaïs Tondeur's *Flat Hemispheres*, courtesy of the artist and Patricio Retamal

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Tuesday to Friday 11am - 6pm
Saturdays 11am - 4pm
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Admission free

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