TRAUMA

The Art and Science of Trauma

Susan Aldworth
Suzanne Anker
Dr Jake Burrell
Dr David Dexter
Dr Megan Dowie
Katharine Dowson
Charlie Franklin
Rachel Gadsden
Dr Steven Gentleman
Shelley James
Luke Jerram
Andrew Krasnow
Michal Macku
David Marron
Darragh O'Callaghan
Anaïs Tondeur
William Utermohlen
Jacek Wankowski

GV art

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Introduction to The Art & Science of Trauma at GV Art

1st December 2011 to 18 February 2012

Trauma affects us all throughout our lives, and is part of the human condition that GV Art and its growing community of artists and scientists are working together to investigate, in ways that a single disciplinarian may struggle to achieve in isolation - and without beauty.

This exhibition is representative of our support of artists who generate meaningful collaborations and dialogues with scientists to investigate the human condition. The scientists in this exhibition give context and richness to the theme that the artists express. They appreciate art and don't merely think of it as a way of illustrating their work, but collaborate with artists for the exchange of ideas and investigations into new realms of thinking. Sustaining artistic practice is a key objective for GV Art in the coming years, as we work to develop relationships with a variety of supporters, be they practitioners or other interested parties.

I decided *Trauma* should open on 1 December to remind us that, on 30th International World Aids Day, we are still talking about HIV/Aids in the present tense and not as a thing of the past, and to add to a much-needed awareness. I would like to dedicate this exhibition to my dear friends Dr Brian Kennedy 1953-1990) and Robin Moonie (1961-1995) who were amongst the first of many friends to be forced into the battle with HIV.

It is no surprise that Rachel Gadsden, whose work we have closely followed and supported for many years, is part of this group show and that her Olympiad project - utterly in tune with our exhibition concept - also links to Luke Jerram's glass microbiology sculptures of HIV.

The works of Katharine Dowson and Susan Aldworth have greatly enriched the exhibition, as has the work of other artists like Suzanne Anker, Darragh O'Callaghan, Anaïs Tondeur, Shelley James and Jacek Wankowski, who we have been following more recently and are delighted to include them in *Trauma*.

The response to William Utermohlen's work has been so encouraging, we will be presenting his London retrospective solo exhibition next year to coincide with his exhibitions in Paris and Milan in 2012.

David Marron has once again (without any grants or other financial support) been able to create new work in response to our call to artists.

Charlie Franklin's wall sculpture is irresistible and Andrew Krasnow's generosity to sell a lithograph of his *The Hollow Muscle* object demonstrates his commitment to his work and to GV Art, while external forces challenge us all to think about our own ethical positions in a fast-changing society.

This time of year is a happy one for most people but, for some, it is a reminder of traumatic times of loss and other challenges, visible and invisible. Whatever it might have been, we all want 2012 to be a better year for everyone.

Robert Devcic
Director and Founder
GV Art, London
December 2011

ESSAY

Grey Matter – The Art and Science of Trauma

Dr Jonathan Hutt & Bojana Popovic

"I have found it easier to identify with the characters who verge upon hysteria, who were frightened of life, who were desperate to reach out to another person. But these seemingly fragile people are the strong people really."

Tennessee Williams

Traumas are both personal and impersonal, physical and psychological, short-lived and long-lasting. Sometimes only visible through the lens of a microscope, their impact can be both unique and universal.

Our exposure and proximity to trauma has never been greater. The immensity of once remote suffering is now made immediate by the pervasiveness of raw, unprocessed data, forcing us to consider events, not in strict isolation, but as part of a broader but ill-defined sense of our own (lost) humanity. Nor is this contact confined to the present. Trauma increasingly colours our configurations of the past, as new historical narratives seek to address the singular and collective traumas within our own lives and those of earlier generations. It also finds expression in our anxiety for the future; in the realisation of our genetic inheritance, our perpetuation of dysfunctional behaviours and the toxic footprint we will leave behind.

But for all these attempts to identify, understand, empathise and find language through which to articulate these experiences, trauma remains stigmatised and something from which we avert our gaze. Is this driven by a simple fear that to verbalise trauma is to perpetuate its existence? Or is it a more visceral reaction to our own fragility and mortality? This exhibition is an attempt to

understand the various manifestations of trauma both natural and man-made – revealing the intimate experiences of those who have witnessed, experienced and worked with trauma while also investigating perceptions of sometimes concealed mental distress. The artists involved in this project employ a diversity of approaches, charting the full dimensions of trauma from the micro-molecular to those on a global environmental scale. Together, this constellation of work prompts the viewer to re-examine their own aversions to the subject matter. It is hoped that, rather than categorise trauma merely as the path towards inevitable decline or a note of finality, we will come to consider it – in equal measures – a powerful affirmation not merely of human life, but also the human spirit.

Under the banner of the Art and Science series, *Trauma* is a further cross-disciplinary collaboration between GV Art and the artistic and scientific communities. This holistic approach is designed to find links between the clinical exploration and personal experience of trauma. As the contributions of Doctors David Dexter, Jake Burell, Megan Dowie and Steven Gentleman to the exhibition and this catalogue illustrate, such exchanges are highly beneficial – helping to demystify the notions of trauma and illness while also defining areas of shared interest and experience that pave the way for broader and more intricate collaborations.

As with previous exhibitions in this series, it is science that provides us with the parameters and broad definitions that in turn serve as a starting point for new intellectual and artistic inquiry. In this instance, a variety of samples capturing brain trauma and degenerative illness reveal the previously invisible and strangely beautiful world of trauma. Examined through the lens of an electron microscope, the body's complexity, frailty and artistry are laid bare. As Steven Gentleman, a specialist in Neuropathology at Imperial College London, notes: 'Because of my work and pace of life, art rarely consciously plays a role in what I do, but when I look through a lens what I see is beautiful. I want to share that so other people can see what I see'.

This sentiment is mirrored in Luke Jerram's *Glass Microbiology*, which endeavours to 'present the dichotomy between the beauty of cellular constructions and the havoc they wreak on humanity. Magnified over a million times, these delicate glass sculptures underscore the fragility of the human body when faced with viral infection, while questioning their role in our continued existence. Jerram points out, 'Without viruses, the genetic revolution we are now experiencing would be impossible. They serve numerous beneficial functions we are just beginning to understand.' Consequently, the artist is asking us to look beyond the surface menace of works such as *Untitled Future Mutation* and search within their complex inner workings for the possibility of a world liberated from pain.

At the interface of art and science, Susan Aldworth's work depicts apoptosis or programmed cell death (PCD), exploring the condition in terms of its association to neuronal cell death in Alzheimer's disease but also its function in the formation of the body in its embryonic stages. For Aldworth, apoptosis (derived from the Greek ἀπόπτωσισ 'the falling of petals') – unlike traumatic cell death with its implications of finality – highlights the ongoing relationship between physical and material transformation and the evolving but immeasurable sense of identity, personality and/or consciousness.

The diverse ranges of extracellular signals that control this process, and seemingly chart each moment of their existence, are brought vividly to life in her lenticular works. The explosive flash of light, colour and movement make visible what Megan Dowie, Research Fellow at Green Templeton College Oxford, explains can be 'the remarkable compensatory mechanisms in the brain that manage dysfunction and enable us to continue functioning' even when faced with the chronic yet invisible trauma of neurodegenerative diseases that have yet to manifest themselves externally.

If there is an openness and ambiguity in Aldworth's work, the implications and impact of Alzheimer's find more direct expression in Shelley James' *Lesion.*

The structure of this coiling glass sculpture emulates the passing of information along the optic nerve which crosses and splits at the optic chiasm before coming together once again in the visual cortex. It is only at the final stage that the message is configured with the activation of physiological references and responses, including memory. But here, there is a rupture in one of the glass loops as signals – in the form of imprinted beads – trickle out, representing the scenes of everyday life and the memories they evoke that are now lost forever.

The intense physicality of trauma is also a major theme within this exhibition. The need to break free of some unspecified trauma is depicted in Michal Macku's gellage works, where the human form is literally torn in an effort to rid itself of the torments within. But it is uncertain whether the "interior landscapes" contained within, reveal genuine and authentic liberation as hoped, or simply momentary respite.

Rachel Gadsden takes a divergent approach where corporeal impulses ignite her work bringing energy, fragility and rawness to her subject. Externalising the invisible world of those living with HIV/AIDS in South Africa, she attempts to capture the physical sensations of trauma drawing on her own unseen disability to create a direct emotional connection between subject, artist and viewer.

The powerful markings in *Ubuntu* also suggest the various channels of communication developed during this ongoing project with the Bambanani Group of Khayelitsha Township in Cape Town. These are the voices of solitary individuals finding strength in companionship, their

appeal for understanding and of those who hope to provide a voice for the vulnerable. Like much of her earlier work, in particular *Denbigh*, Gadsden charts a psycho-geographical journey to a point where these inner and external worlds meet. It is in this common space that she finds a sense of hope and transcendence and a place to 'celebrate the notion of shared humanity and what it truly means to be alive.'

An interest in materiality – the body's imprint of its environment and the psychological traces that remain – are also central to Darragh O'Callaghan's works. The metaphorical renderings of personal anguish conveyed through images of heaviness and unbearable weight point to the afterlife of trauma. In *Focus Point*, the brick wall that gradually engulfs the figure hints at a betrayal by a place once deemed a refuge but one now complicit in their suffering. Yet the power, aggression, danger and desire all visible here, clearly show the indomitable will of those prepared to confront and draw inspiration from the unhealed wounds of the past.

A different attempt to probe the deepest level of consciousness and capture the significance of such fleeting thoughts underpins Suzanne Anker's fusion of the MRI and Rorschachs. Yet, even here in this most ordered and symmetrical of realms, there is a susceptibility to potentially devastating trauma – a potent, even fatalistic reminder of our deluded sense of security.

Unsurprisingly, works representing the traumatized body also feature prominently in this exhibition. Katharine Dowson's *Silent Stories* is a poignant testament to those who have endured radiotherapy for neck and head cancer. The medium of glass in which the artist now renders these protective shells is more than 'a metaphor for the imperfection and fragility of life'. – it is a membrane on which to record this moment of vulnerability. If the harrowing expression of this bust haunts the viewer, it pales in comparison to the view from within. To see as the patient has seen obliges us to contemplate not merely the trauma of treatment, but also its uncertain and

unstated outcome.

A highly personalised reflection on his own fragility and an acknowledgement of the fine and arbitrary line separating life and death, *The Hollow Muscle* is part of Andrew Krasnow's broader exploration of intergenerational trauma, both within his own family and the American psyche. In the original installation of which it is an integral part, the heart appears still more fragile, overpowered by iconic symbols of empire and consumerism. However, removed from this context, it reveals other forms of previously concealed emotional distress. Layered in symbolism and emotionally charged by the nature of the medium in which he works, Krasnow's work is a memorial to endless suffering and a heartfelt testament to loss.

Positioned on the front line of trauma, David Marron's work as a paramedic informs much of his artistic practise. The medical objects and debris he assembles in *Fallen Branches* and *Severed Threads* are, as always, merely entry points into a complex and coded narrative. With each item footnoted and cross-referenced, Marron creates a compendium of scientific, artistic and religious knowledge that provides us both with a basis for understanding and a necessary detachment from the object under examination. Given that the outcomes of the events he has witnessed remain unknown, the narratives Marron derives from them are by necessity open-ended. However, by weaving elements of the heroic and the chimerical into the mundane and, at times, lonely existence of those he encounters professionally, he crafts for us a partial conclusion in which the futility of death is negated and the dignity of life is reaffirmed.

Exploring the conflict between the benign and the malignant, Charlie Franklin's *Matter* is an abstract form that defies precise definition and, as a result, remains deeply unsettling. Here is an entity that is alternatively a natural phenomenon, man-made simulacrum and something entirely more malevolent. Without definition, its "purpose" also eludes us, 'as if it is invading or leaking

into the space it inhabits, making it simultaneously vulnerable and dangerous'. Franklin skilfully plays with the audience's own anxieties, prompting us to want to either reclaim or withdraw from the space now colonised by this nebulous matter.

This ambiguity of object and space is also evident in Jacek Wankowski's *Encrustations – Samurai Blade*. Wankowski's work is, on one level, a representation of parasitical life forms which can exist symbiotically with their host in a state of mutualism. However, the sculpture is designed, quite literally, as a double-edged sword for its scale and sense of menace suggest aggressive attacks on the body by viruses and disease – a blade that cuts down the immune system in a relentless and fatal assault.

By collating a variety of works showing the physical or psychological effects of trauma, this exhibition also posits a broader question: if the body bears the scars of past suffering, what kind of visible or invisible scars can be found on the places where such events took place? For Anaïs Tondeur, the 30 kilometre exclusion zone surrounding the Chernobyl nuclear plant is the starting point for an investigation into the afterlife of widespread trauma. The project *Hebarium: Specimens From The Exclusion Zone* is based on the research undertaken on plant genetics by Slovak Academy of Sciences and looks at trauma endured by flora in areas of high radiation. The images captured, as if by a blast of radiation, point to the true and sometimes unexpected impact of personal, societal and environmental devastation. Perhaps the "opulent wildlife" found in an area isolated for more than a quarter of a century, suggests that there is, in fact, hope for new vibrant beginnings even as we face both unresolved traumas and the prospect of others yet to come.

The diverse artistic responses to the notion of trauma exhibited here illustrate the artists' willingness to understand and communicate trauma through the shared medium of our own

humanity. It is in these very motivations that we find a link joining the art and science communities – namely the need to understand, communicate and, when possible, heal. This urgency finds powerful and very personal expression in the works of William Utermohlen. Standing at the meeting point of the two disciplines, the works included here chart the degenerative effects of the artist's Alzheimer's prior to diagnosis and the raw expression of anger, terror, resignation and perhaps belated cognition that will follow this revelation. However, in some respects, it is not the bravery of the artist who must face this trauma, or even the relation of these pieces to the rich body of work that preceded them that is of greatest significance; it is an awful awareness of the jarring silence to follow.

If these later works are a record of his gradual "disappearance", they are also a clinical journal of the cognitive disorders of this disease. In this regard, they fulfil the same function as the scientific samples exhibited alongside them; capturing human vulnerability and channelling our desire to arrest, reverse and heal. In unison, they prompt even the "amateur" observer to pursue the same line of enquiry: why are some so susceptible while others are spared? What form can my own form of "intervention" take? What will happen if I fail to do so? It is in the simple act of verbalising such questions that, like Utermohlen, we can summon the courage to confront the immensity of our individual and shared traumas head on. Yet this very freedom to question is accompanied by a sense of responsibility; to commemorate those whose suffering preceded us; to empathise with current pain both remote and close at hand; and shield those who are yet to be. n doing so, our own achievements will be noteworthy, for we will have set into motion a chain of events that aim to liberate humanity from this age old cycle of unnecessary trauma.

Dr Jonathan Hutt & Bojana Popovic
Shanghai – London November 2011

THE SCIENCE OF TRAUMA

INTERVIEW WITH DR STEVEN GENTLEMAN

by Bojana Popovic and Dr Jonathan Hutt

How does the brain handle trauma?

Well, the area of the brain that has been damaged determines the symptoms.

But fundamentally there are two stages of brain trauma. The physical brain trauma kills some of the tissue. However, this initial trauma then sparks off a process which is, basically, the brain attempting to heal itself. Although this cellular reaction involving microglia cells is, in the early stages, positive and reparative, sometimes the process persists and has negative implications. If these cells continue to produce substances, it is these that cause further damage. This can, for example, trigger Alzheimer's in some cases. The focus of my research is to find the therapeutic window to stop the process before it has negative implications (neurodegeneration) but after it has had positive effects. It's all about timing. We could do this by screening healthy people who may be prone to the disease and then give them drugs before they feel the effects of Alzheimer's. To do this, we'd need to screen people through a blood test or an imaging scan. This is the focus of my research which I am doing in collaboration with Glasgow.

Sadly, there's not much money put into head trauma research because it is so variable. However, it is the single largest cause of death in people under the age of 45; 31% make a good recovery after head trauma while 19% become severely disabled or in a vegetative state. The rest is on a spectrum between those.

What are the various ways of spotting head trauma?

Focal pathology – where there are obvious visible signs (brain bruise/fracture/bleeds)

Diffuse pathology – subtle signs (microscopic changes – broken connections)

Contusion (a bruise on the brain) is one of the main things you look for in head injuries, or a bleed. There are three layers of membrane around the brain and, depending on where the bleed is, there are different effects. It can either result from a vein or an artery. Because veins have lower blood pressure, their bleeds are harder to spot but can have awful consequences if unnoticed.

You are planning a project in Afghanistan with Soldiers?

This is still in its theoretical stages. The project in Afghanistan hasn't started yet. What I want to look at is the effect explosions have on the head. Protective clothing ensures a soldier's organs in the torso remain almost unharmed, but this in fact deflects the impact of a blast up towards the head, which has severe effects.

In head injuries (e.g. a road traffic accident), most trauma has an angle. The brain moves at a different time to the skull and hits against it upon impact. Depending on the angle of impact, the area of the brain damaged changes, together with the effects this has on the person.

Do you have direct contact with any patients suffering from Alzheimer's or Parkinson's?

I take part in Parkinson's and Alzheimer's charity-funded care-group sessions where I explain the science behind the diseases.

Parkinson's is a motor problem initially, so helping people come to terms with what it means is far more important through direct contact with the person who has the disease.

Alzheimer's, on the other hand, I have most interaction with carers. In the later stages of the disease, when the victim does not recognise loved ones, it is very tough on the carer who has aided the person for such a long time. It becomes very difficult.

Do you mind talking about your own experiences with head trauma?

No, not at all. I had an underlying condition which I knew was present but it had no major effects. Work-related stress because of my promotion to professorship triggered a sharp change. I collapsed at work and was unconscious for three days. I woke up, surrounded by family and colleagues, in the ward in the hospital where I work. It was surreal being a patient in the ward I worked closely with. If I wasn't at work at the time, and didn't have my colleagues there to help me, I probably wouldn't be here. I recovered far better and quicker than expected and I believe the fact that all of this happened at the right place at the right time, meant my chances were raised considerably. I was very, very lucky.

My own experience has affected the way I perceive life and my priorities. It has made me reflect on my values – on the importance of spending more time living life and being with my family. In a sense, it's had a positive effect on my life.

Did your personal experiences affect the way you treated your work and research?

I feel that now that I have been on the other side of it – as a patient feeling all of the effects as opposed to someone conducting research on a condition, it has changed his outlook and aims. I

run lectures for medical students where I try to give them a better insight into what they can expect a patient to be feeling, thinking, and worrying about. I really believe that by demystifying whatever condition the patient has and explaining to them as much as possible, this can really help them feel more prepared.

Also, now that I am a professor and can focus on whatever I want to, I have chosen to reinitiate some trauma projects. This way, I can focus on making real changes.

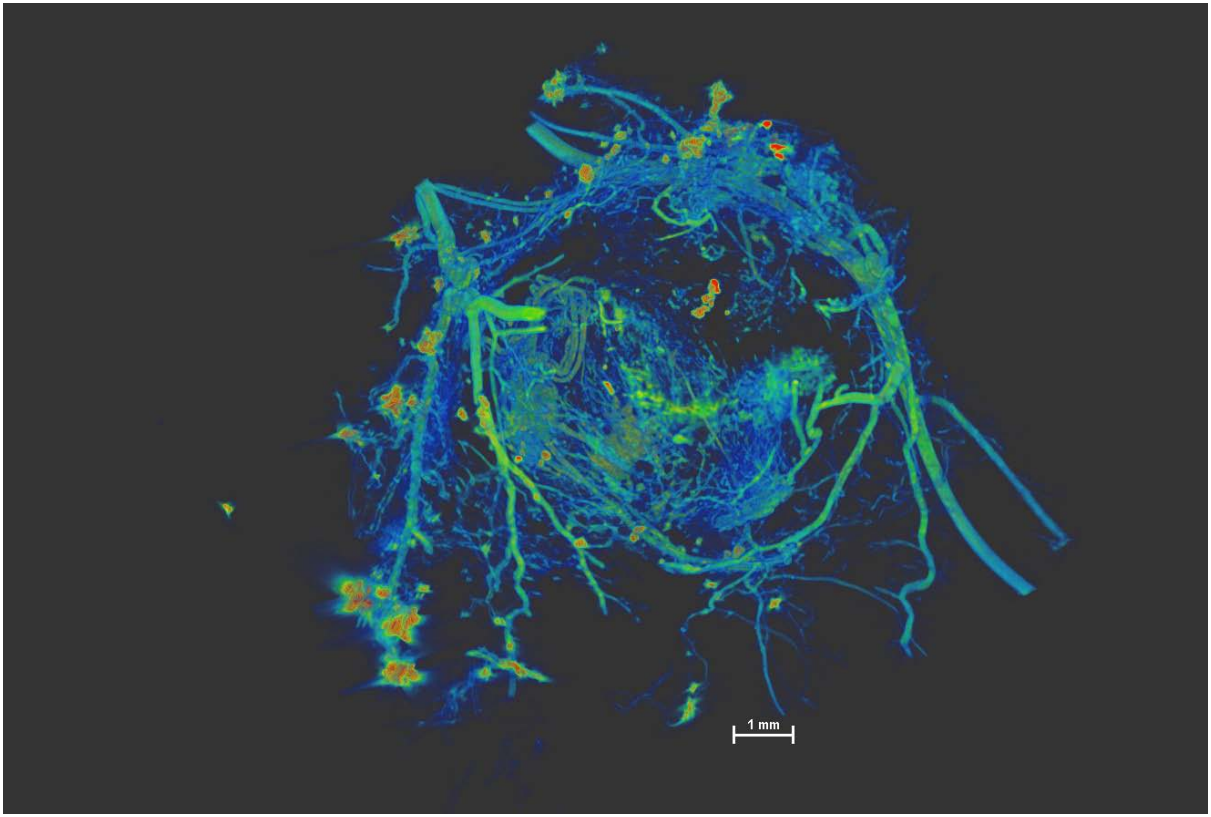
Why did you want to get involved with the *Trauma* exhibition? What do you think it can bring?
I wanted to take part in the exhibition because I feel that communication with the public is paramount. The internet has lots of information, but do we understand it? I feel it is my responsibility, as a scientist, to show and explain precisely because I am coming from a background where I am in the position to know far more about these conditions than people who don't work in this field. I want to reach wider audiences just like I've been doing through my care group meetings only further. I'm also interested in the chance to get involved with the art side. Because of my work and pace of life, art rarely consciously plays a role in what I do but, when I look through a lens what I see is beautiful. I want to share that so other people can see what I see.

Dr Jake Burrell

SW1222

Micro vascular corrosion casts are high-resolution replicas of vascular networks, formed by injecting a vessel network with a low viscosity monomer resin which polymerises over a period of 10 minutes, becoming a solid acrylic. The tissue surrounding the blood vessels is then dissolved using an alkaline solution. Given the low viscosity of the resin, it perfuses every micro capillary of a vessel network, and provides an extremely detailed model of the spatial properties and structure of the blood vessels. Unlike healthy blood vessel growth, tumour blood vessel growth is highly disorganised and deregulated, and the corrosion casts provide a glimpse into the chaotic and mutated blood vessel growth that sustains the tumour and allows it to grow and eventually spread to other parts of the body.

The vascular corrosion cast displayed here is taken from a tumour derived from human colorectal cancer, known as an SW1222 cell type. The cast was used for research purposes to validate a cutting edge non-invasive MRI method of measuring blood vessel diameters, which may eventually be used for early evaluation of the efficacy of cancer drugs.



Jake Burrell, *Microscopic image of vascular corrosion cast SW1222*

Jake Burrell completed his PhD at The Institute of Cancer Research, where he worked developing novel magnetic resonance imaging (MRI) methods for imaging tumour blood vessels. Most solid tumours must grow a network of blood vessels in order to survive, and due to the vital nature of these blood vessels for tumour survival and progression they are an attractive target for modern anti-cancer drugs. Therefore, the development of methods for non-invasively imaging tumour blood vessels in the clinic is important for the development of new cancer therapies. Jake currently works at a medical communications agency.

Dr David Dexter

Cellular Trauma

Trauma can take the form of emotional shock following a stressful event or a physical injury. The human body generally has a tremendous ability to recover from trauma, overcoming emotional distress and repairing injury through tissue regeneration. Unfortunately, one of the principle organs in the body, the brain, has very limited ability to repair itself. Head trauma from accidents is a very physical attack on the integrity of the brain and can result in disability. However, a more silent traumatic attack on neurons, the principle cells within the brain, often occurs, precipitating disabling disease such and Parkinson's disease, Alzheimer's disease, multiple sclerosis, etc. Such diseases have a major impact on the quality of life of individuals affected and represent a significant burden on our health care services. There are also no effective therapies to treat/cure for these often devastating conditions.

Over the past few decades, researchers have revealed the nature and extent of the cellular trauma that precipitates such diseases, but what causes such trauma is not clear. Animals are not affected by these debilitating disorders; hence the best way in understanding these trauma mechanisms is to look at the brains of those individuals affected by them. Looking at the brain of healthy and affected individuals is like looking at the scene of a crime where researchers are trying to uncover what is causing the trauma. A number of donor programs exist at research institutions across the UK, where healthy individuals and patients affected by diseases such as Parkinson's can donate their brains to foster such important research.

Research on donated brain tissue, but it is not clear what the triggers are for these disease mechanisms and how we can prevent them. One of the "culprits" identified are defective or

altered proteins e.g. amyloid in Alzheimer's disease and alpha-synuclein in Parkinson's disease. Proteins are small molecules which are the engine components that enable all of our cells in our body work correctly. Such protein components can become defective or are made defective during manufacturing. Unfortunately, such defective or altered proteins are toxic to cells. Our brain cells do have mechanisms to remove such altered protein, but the function of this system declines with age, and age is often a significant risk factor in developing such brain disorders.

The pieces of this highly complex jigsaw are slowly being revealed, but we still have a long way to go. Every man in the street can help understand how this silent trauma causes such debilitating conditions by donating their brain for research. Research needs brains from healthy donors as much as donors which are affected by disease, since they need to see how the healthy brain functions and compare that to what is happening in disease.

Donor consent form

PARKINSON'S UK
CHANGE ATTITUDES.
FIND A CURE.
JOIN US.

Parkinson's UK Brain Bank
Centre for Neuroscience
Imperial College London
Hammersmith Hospital Campus
160 Du Cane Road
London W12 0NN

Tel: **+44 (0)20 7594 9732**
Fax: **+44 (0)20 7594 9733**
Email: **brainbank@imperial.ac.uk**

Consent for the procurement of tissue for research into Parkinson's and other neurological disorders

I .....(print name with title)

of .....(print full address)

.....

.....(postcode)

.....(telephone number)

- In the event of my death, I wish for the Parkinson's UK Brain Bank to collect and store my brain, spinal cord and samples of other tissues and fluids for respectful and ethical use in research, including genetic analysis.
- I have read the information sheet on the donation of tissue.
- I give the Parkinson's UK Brain Bank permission to access clinical information from my medical records once they have retrieved my tissue, and to use it and make it available to researchers on an anonymous basis who come from third party institutions.
- I am aware that my next-of-kin or legal representative should sign the enclosed form to indicate their agreement with my wishes.
- I will tell all healthcare professionals looking after me about my wish to donate tissue to the Parkinson's UK Brain Bank.
- I give permission for my tissue to be used for teaching purposes or for public display.
- I appreciate how important it is that following my death someone immediately calls the **24hr Brain Bank Donor Line: 07659 10 45 37** (this contact number will be printed on your donor card).

Parkinson's Brain Bank – Donor Form

David T Dexter is a Reader in Neuropharmacology at Imperial College London and the Scientific Director of the Parkinson's UK Tissue Bank at Imperial College. He obtained his BSc (Hons) Pharmacology degree at the University of Bradford and his PhD in Pharmacology at the Institute of Psychiatry, University of London. Dr Dexter was awarded a lectureship position at Imperial College in 1994 and has established a successful research team, principally looking into the disease mechanisms that cause Parkinson's disease and the development of novel drug therapies. His research utilises donated human tissue, cell culture and animal models to identify drug targets and translate these finding through animal models into the clinics. Dr Dexter has produced some seminal papers particularly in the field of brain iron, oxidative stress and mitochondrial deficiencies in Parkinson's disease. Dr Dexter was instrumental in setting up the Parkinson's UK Tissue Bank at Imperial in 2002, which operates a prospective donor scheme and collects Parkinson's and healthy donor brains from all over the UK. In 2009, the Parkinson's UK joined forces with its sister MS Society Tissue Bank to form a joint Tissue Bank, funded jointly by the respective Societies, which holds over 1,000 brains and is internationally recognised as a supplier of high quality tissue to foster research into Parkinson's disease and multiple sclerosis.

Dr Megan Dowie

Neurodegeneration: an example of chronic trauma at the cellular level

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The death of brain cells, or neurons, is a feature of ageing itself. However, this process of neurodegeneration is amplified in specific diseases of age including Parkinson's, Alzheimer's and Huntington's Chorea.

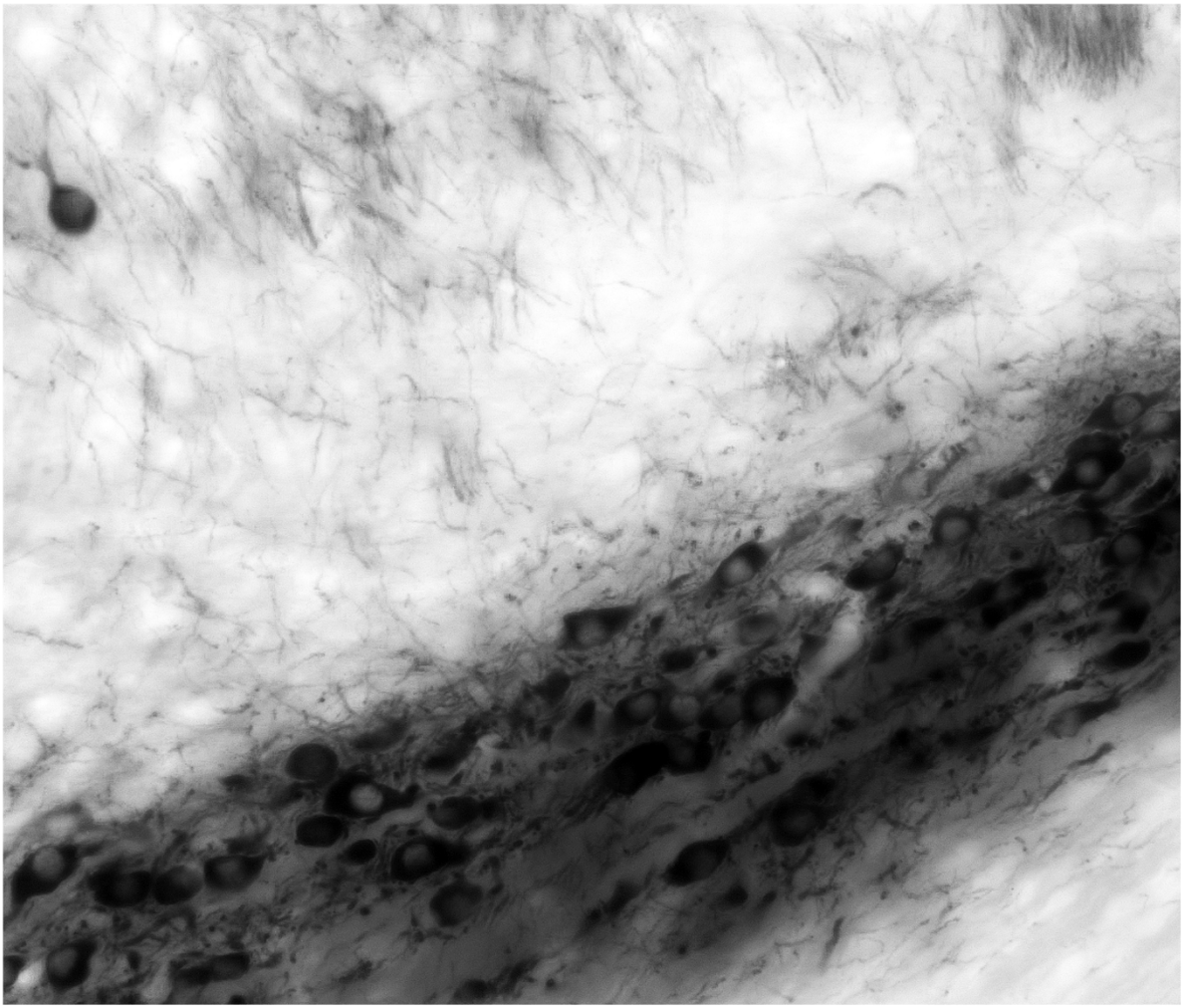
In neurodegenerative diseases, selectively vulnerable neurons die in specific brain regions. Cells become dysfunctional, for example they make fewer necessary proteins and increasingly have accumulations of toxic protein aggregates. These dysfunctional changes often occur prior to the neurons dying and before patients actually show symptoms of the disease or are diagnosed with an illness. This is partly due to the remarkable compensatory mechanisms in place in the brain that manage dysfunction and enable us to continue functioning relatively normally even when things are going wrong. In addition to neurons dying, other cells in the brain, involved in inflammation and immune responses, may be activated. These immune cells respond and contribute to repair, but their mechanisms may themselves additionally have detrimental effects.

Neurodegeneration is an example of *chronic trauma*, as there are long-term changes occurring over time. These *traumatic* changes are occurring at the level of individual cells and the networks of brain cells. A key objective of a lot of neuroscience research is to prevent the deterioration from happening or investigate ways of reversing these effects.

In Parkinson's disease, the neurons that die normally produce a chemical called dopamine and are located in a region called the *substantia nigra pars compacta*. These *dopamine* neurons are vital for communication between brain regions involved in motor and cognitive functions. While

it is known that these neurons are critically involved in the disease, it is still poorly understood why they are vulnerable, how to prevent their dysfunction and death, or exactly why some people are more susceptible to the disease than others.

This light microscope image shows the dopamine neurons in a thin section of normal brain tissue. They have been labelled with a specific stain making them stand out from the pale background. The central part of the neurons, the cell bodies, and long cell processes referred to as dendrites, are visible. In this image you can see where the cells are located, in the *substantia nigra pars compacta*. They communicate with another part of the brain, the striatum, through axonal processes.



Megan Dowie, *Neurodegeneration: an example of chronic trauma at the cellular level*

Megan Dowie completed a PhD in Pharmacology in 2009 at the University of Auckland, New Zealand. Her research centred on the endocannabinoid system in Huntington's disease, to evaluate the pathological nature of changes occurring in this neuromodulatory system. Megan has also been extensively involved in science outreach activities; including helping to organise the annual Auckland Brain Bee Challenge and co-curating the *Do You Mind?* art-neuroscience collaboration in 2010. Megan remained in Auckland at the Centre for Brain Research, supported by a Kate Edger Educational Charitable Trust Postdoctoral Research Award until moving to the University of Oxford in 2010.

Currently, Megan is the Girdlers' New Zealand HRC Postdoctoral Fellow at the MRC Anatomical Neuropharmacology Unit, and is a Research Fellow at Green Templeton College. Her neuroscience research focuses on the analysis of populations of interneurons in the striatum and their inputs from the cortex and thalamus, initially by electron microscopy. She is also involved with ultra structural investigations in transgenic models as part of the Oxford Parkinson's Disease Centre and has established a collaborative project with the inaugural MA (Art and Science) degree course at Central Saint Martin's, University of the Arts London.

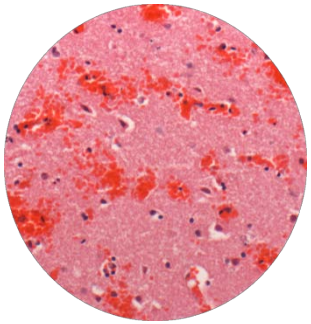
Dr Steven Gentleman

Microglial Cells: Friend Or Foe?

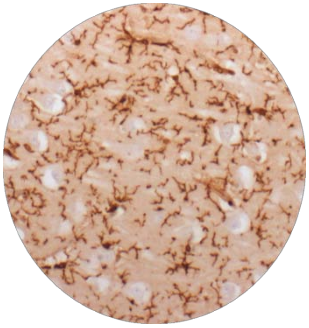
Serious head injury can cause a wide variety of pathological changes in the brain. One of the most common forms of damage is called a contusion, which is essentially a bruise on the surface of the brain. Normally the brain is very well protected inside the skull but , for example, in road traffic accidents where there is a high speed collision, there can be a very rapid deceleration of the head and brain. Unfortunately, they can decelerate at slightly different rates and the front of the brain can actually collide with the inside of the skull. Not only that, there may also be a rebound effect and damage caused to the back of the brain. This causes so called "coup" and "contracoup" contusions. **Slide A** shows an example of a frontal contusion: the nerve cells and "glial" support cells of the brain are stained very light blue but throughout the section there are also numerous red blood cells. In the normal brain, these would be confined to the blood vessels but in this case there is a localised bleed, the cells have escaped from the vessels and they are scattered across the whole tissue section.

In addition to the very obvious damage that is seen in contusions, there are also more subtle pathological changes that can be seen in the brain. One of these, which involves disruption of nerve cell processes, is a phenomenon known as traumatic axonal injury. If this damage is extensive, it is not normally compatible with life and the patient is likely to die from the injury. If the damage is not extensive, the symptoms that are seen will depend on exactly which nerve cell populations have been affected. The brains natural protective mechanism in a situation like this is the activation of a subset of the glial support cells, called microglia. These cells are in a lattice-like arrangement throughout the brain and are very quick to sense any disruption to normal function. This network of microglial cells can be clearly seen in **Slide B**. Having been

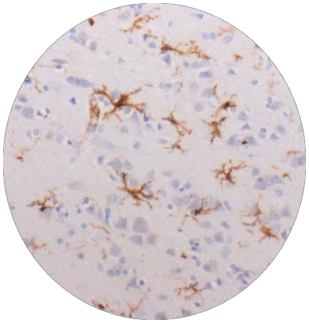
activated, these cells change their shape and their processes become noticeably thicker. Some become macrophages which can digest and clear areas of dead tissue and others secrete chemicals that aim to repair damage. Examples of activated microglia can be seen in **Slide C**. While this protective response is very useful, it seems that if the microglial cells remain activated for too long they can actually start causing damage to healthy brain tissue. It is this persistence of microglial cell activation that is thought to underlie the neurodegenerative changes that can occur in longer term survivors of head injury.



Slide A – Red blood cells which have leaked from blood vessels in a contusion or "bruise" on the surface of the brain. The cells stained in light blue are nerve cells and their support cells.



Slide B – A network of support cells called microglia which are found throughout the brain and detect any damage that occurs. Activation of these cells initiates a cascade of events which help to protect the brain.



Slide C – Activated microglial cells stained in brown. These cells can fight off invading infections and can clear away dead brain tissue. However, if they stay activated for too long, they can start damaging healthy nerve cells

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Steve Gentleman, *Microglial Cells:* Friend Or Foe?

Steve Gentleman is Professor of Neuropathology in the Department of Medicine at Imperial College London. Over the past 20 years, he has run an active research team investigating the pathological changes seen in the brain in neurodegenerative disease and traumatic brain injury. In some of his early work, he identified pathological changes in the brains of people who had died of a serious head injury which were very similar to those seen in the early stages of Alzheimer's disease. This link, based on inflammatory mechanisms, is still the focus of research for his research team in collaboration with colleagues throughout the UK and USA. He also discovered that damage to the processes of nerve cells as a result of head injury was far more common than originally thought. In more recent years, he has been part of a European consortium of neuropathologists who have been working to improve the standards for the diagnosis of neurodegenerative diseases. Using this expertise, he provides diagnostic support for the Parkinson's UK Tissue Bank at Imperial and is a member of the Medical Research Council Brain Bank Network management committee.

THE ART OF TRAUMA

Susan Aldworth

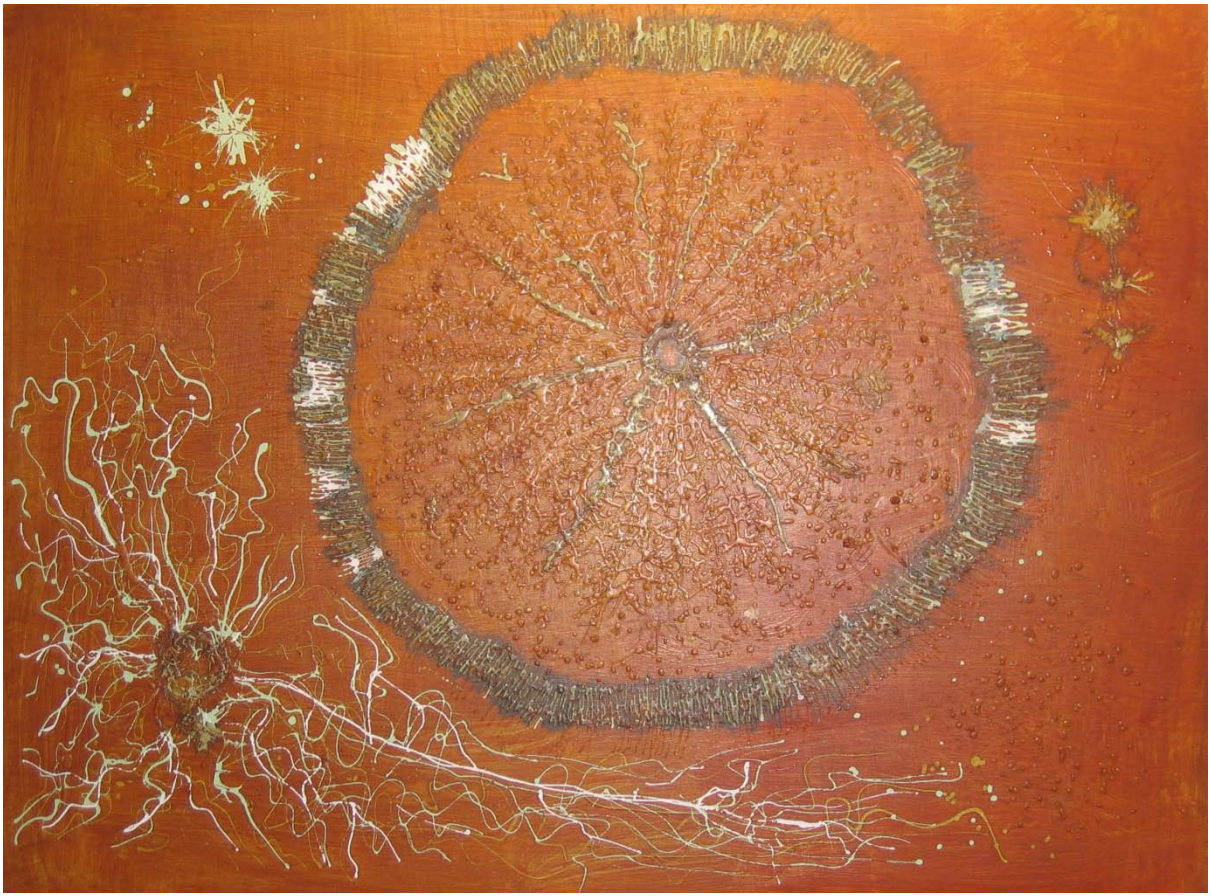
The works that I have submitted for the *Trauma* show at GV Art pursue a theme I have been exploring over the past decade – the relationship between our sense of self and our physical bodies. We are embedded and embodied in our anatomy – but, as **Philip Larkin** says in his poem, *Ignorance*:

"Our flesh surrounds us with its own decisions."

Susan Aldworth

Apoptosis 6

Huge things happen to us because of our individual physical make-up – major traumas such as birth, illness and death. But the body also generates smaller, hidden traumas like apoptosis – programmed cell death that occurs as a normal and controlled part of an organism's growth or development. In my painting *Apoptosis 6*, I explore the strange and ambiguous beauty of the concept of Apoptosis. Recently, studies have suggested that apoptosis – programmed cell death – may have a role in the neuronal cell death associated with Alzheimer's disease. But it is a fantastically complicated process with positive as well negative function in the human body. For instance, apoptosis is the reason for the differentiation of fingers and toes in a developing human embryo because cells the between the fingers are programmed to die. It stands in stark contrast to necrosis, which is traumatic cell death. This work was made in response to my residency in the Gordon Museum of Pathology in 2009.

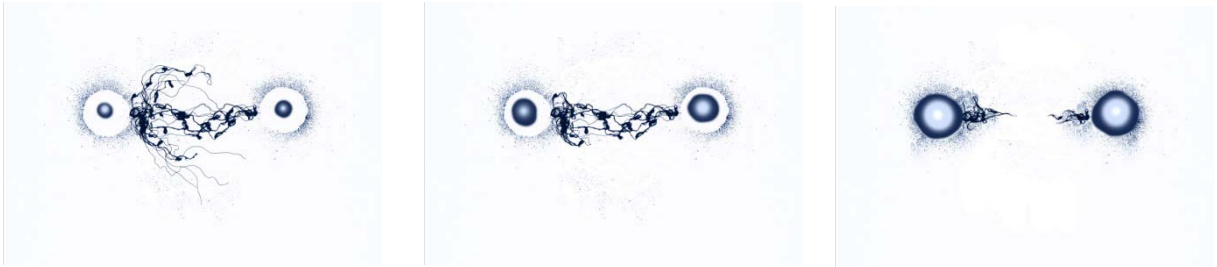


Susan Aldworth, *Apoptosis 6*

Susan Aldworth

Transition 1-5

In a suite of lenticular prints *Transition 1–5*, I explore the personal trauma of sudden bursts of excess electrical activity in the brain which characterise epilepsy and can result in a fit. They were made during my residency in the Department of Neurophysiology at St Thomas' Hospital in 2010. I worked closely with consultant Michail Koutroumanidis and a number of his patients to understand their experiences of living with epilepsy. The prints are based on personal descriptions of shapes and colours seen in occipital epilepsy. People with epilepsy have sudden bursts of excess electrical activity in the brain which can be seen in EEGs which record brain wave patterns. I decided to make lenticulars – layered images which move and change as the viewer moves around them. I thought they would be an exciting way to suggest electrical activity in the brain. I based the lenticulars on both EEGs and the photographs of electrical charges by the 19th-century visionary engineer William Armstrong.



Susan Aldworth, *Transition 1*

Susan Aldworth lives and works in London. She took a degree in philosophy at Nottingham University prior to studying printmaking at Sir John Cass in London. Aldworth is Senior Research Associate at Swansea Metropolitan University and Research Fellow in Print at London Metropolitan University. Working on location as an artist-in-residence in a medical or scientific setting is central to Aldworth's practice. She weaves together personal, medical and scientific narratives in her experimental print and film works on human identity. She is Artist-in-Residence at the Institute of Neuroscience at Newcastle University, working on a project exploring schizophrenia which will be shown as *Reassembling the Self* at the Hatton Gallery and Vane in Newcastle in 2012.

A solo exhibition of her portraits of people with epilepsy, *The Portrait Anatomised*, will be shown at the National Portrait Gallery in 2013. Aldworth regularly exhibits nationally and internationally and her work is in many public and private collections, including the V&A and the British Museum. Future exhibitions include *Images of the Mind* at the Deutsches Hygiene-Museum Dresden and the Moravian Gallery Brno and the 6th International Kyoto Hanga Print Exhibition Japan/UK in 2012.

www.susanaldworth.com

Suzanne Anker

MRI Butterfly #5

Traversing between the psychological and the physical, trauma begins at birth or even before. Coming into being, not by a will of one's own, but by the actions of others gives us great pause and threatens our feelings of omnipotence. As noted by pathologist and author F. Gonzalez-Crussi, in *On Being Born and Other Difficulties,* 'we are brought forth into existence, bodied forth, by forces that we cannot control'. Thus, these forces continue to operate within our psyche, always reflecting one's loss of will.

How is trauma connected to memory, its construction and reconstruction? How is it pictured in works of art? Works of art are memory traces, pointing at once to the self and the society, creating thoughts and feelings that oscillate between somatic interiority and lived experience. Ways of seeing permeate interpretation, as instruments of matter and memory intervene on levels of perception and participation.

As a visual technology of self, the Rorschach is a psychological projective test, widely recognized by a public audience. It has to some extent become a cultural icon. Appearing in the work of Andy Warhol, Annette Messenger and others, the Rorschach continues its occult status as a possible lens into the private and public imagination. Originating as a children's game called Blotto, inkblots are employed as stimuli intent on forcing the unconscious to give up its quarry.

The MRI, on the other hand, is the most technologically advanced process that can peer beneath the surface of the skin. Like the Rorschach or the butterfly, it is also morphologically

symmetrical. This series of work superimposes a butterfly over a Rorschach ink-blot over an MRI brain scan. The image of the butterfly is perceptually altered in this overlay, although no adjustments have been made in reality. Hence, the viewer experiences an illusion, even against his or her will.

Suzanne Anker, *MRI Butterfly #5*

Suzanne Anker is a visual artist and theorist working at the intersection of art and the biological sciences. She works in a variety of mediums ranging from digital sculpture and installation to large-scale photography to plants grown by LED lights. Her work has been shown both nationally and internationally in museums and galleries including the Walker Art Center, the Smithsonian Institute, the Phillips Collection, P.S.1 Museum, the JP Getty Museum, the Mediznhistorisches Museum der Charite in Berlin, the Center for Cultural Inquiry in Berlin, the Pera Museum in Istanbul and the Museum of Modern Art in Japan. Her books include *The Molecular Gaze: Art in the Genetic Age*, co-authored with the late sociologist Dorothy Nelkin, published in 2004 by Cold Spring Harbor Laboratory Press, and *Visual Culture and Bioscience*, co-published by University of Maryland and the National Academy of Sciences in Washington, D.C. Her writings have appeared in *Art and America, Seed Magazine, Nature Reviews Genetics, Art Journal, Tema Celeste and M/E/A/N/I/N/G*. Her work has been the subject of reviews and articles in the *New York Times, Artforum, Art in America, Flash Art, Nature* and has been cited by Barbara Maria Stafford, Donna Haraway and Martin Kemp in their texts. Most recently, she has collaborated with anthropologist Sarah Franklin, on an article and interview for *Social Text* journal. She has hosted 20 episodes of the *Bio Blurb* show, an internet radio program originally on WPS1 Art Radio, in collaboration with MoMA in NYC, now archived on Alana Heiss' Art On Air. She has been a speaker at the Royal Society in London, Cambridge University, Yale University, the London School of Economics, the Max-Planck Institute, University of Leiden, the Hamburger Bahnhof Museum in Berlin, the Courtauld Institute of Art in London, the Banff Art Center and many others. Chairing SVA's Fine Arts Department in NYC since 2005, Ms Anker continues to interweave traditional and experimental media in her department's new digital initiative.

www.suzanneanker.com

Katharine Dowson

Radiotherapy Patient 10

Radiotherapy Patient 10 is an individual who has journeyed through Radiotherapy treatment sessions for cancer of the head and neck. It is a cast in glass from the incidental plaster portrait made during the treatment process. From one side, you see the face that is shown to the outside world and, from the other, you see the patient's inner world.

The glass is a metaphor for the imperfection and fragility of life. The rough cast reflects the quality of the original plaster cast, which is designed as only a platform for making the final shell. They are thrown away but incidentally record the patient's portrait and moment of vulnerability.

The open mouth of Patient 10 was needed for their treatment but it also suggests the inner psychological trauma patients can go through and has similarities to *The Scream* by Munch.

Katharine Dowson, *Radiotherapy Patient 10*

Katharine Dowson studied Sculpture at the Royal College of Art and exhibited in London, 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. She was bought by Charles Saatchi and is included in *Shark Infested Water, Saatchi Collection of British Art in the 90s*.

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

More recently, her work has been in *Seeing Heads* Hatton Gallery Newcastle; solo show *Mitosis*, Newcastle; *Gregor Mendel, Planting the Seeds of Genetics*, USA touring exhibition; *The Glass Delusion,* UK National Glass Centre and the GV Art London exhibitions *Experiments*, *Brain Storm* and her 2010 solo show *Relics of the Mind.* In 2011-2012, her work will be in *Images of the Mind/The Mind in Images,* at the Deutsches Hygiene-Museum Dresden and the Moravian Gallery Brno.

www.katharinedowson.com

Charlie Franklin

Matter

'Matter' examines the physicality of sculpture using man-made materials to reference natural formations, such as rock, mould and ice. Ideas around ambiguity and anxiety are investigated by presenting the work in a formless manner, as if it is invading or leaking into the space it inhabits, making it simultaneously vulnerable and dangerous.

An on-going interest in opposites and the absurd tension they can produce underpins this work, where Franklin has been considering three specific sets of poles: seduction and repulsion, chaos and order, and the natural and man-made.

Process Art from the 1960s, such as Eva Hesse and Robert Morris, have been informing her practice, as well as time-lapse video footage from contemporary nature documentaries.

Charlie, Franklin, *Matter*

Charlie Franklin completed her BA in Fine Art at Middlesex University in 2005 and her Master's degree in Fine Art at Chelsea College of Art and Design, London, in 2008. Recent exhibitions include *Other Structures*(London), *PITV* (Stockholm), *Inland* (Suffolk), and a solo exhibition at Motorcade/FlashParade (Bristol). She is one of the winners of The Whitechapel Gallery East End Academy Studio Prize 2010 and was artist-in-residence at Forest Gate Community School in East London during spring 2011. Charlie has also recently been awarded a residency in Iceland, at The Hafnarfjordur Centre of Culture and Fine Art, in 2012. She lives and works in London.

www.charliefranklin.org

Rachel Gadsden

Ubuntu

"*I am what I am because of who we all are*"
(From a translation offered by Liberian peace activist **Leymah Gbowee**)

"Ubuntu" narrates the traumatic journey that members of Bambanani (a xhosa word meaning stand together/unite) have engaged in since they were infected with the HIV/Aids virus at the end of the 20th century.

Until each of them began the first of the free anti-retroviral treatment plans commissioned by Médecins Sans Frontières MSF in 2001, these individuals were the forgotten ones of the Khayelitsha township abandoned by the hospitals and sent home to their shacks to die.

This artwork expresses how the group supported each other to cope with the trauma of their chronic illness and how they dealt with the opportunistic infections that ravaged them, both physically and psychologically, until such time as the treatment was developed.

Thobani leads the group – all migrants from the Eastern Cape – with dynamic energy, supported by the strength of his crutches, which he now uses as a consequence of the muscular weakness that the virus has inflicted on his body.

This is a complicated narrative with many social and political ramifications, but the members of the group survive as disciples spreading positive messages relating to the HIV/Aids virus. The

trauma will never go away, but nevertheless they are survivors bringing hope and strength to all those they come into contact with.

Rachel Gadsden takes a divergent approach to the subject of trauma, where corporeal impulses ignite her work bringing energy, fragility and rawness to her narrative. Externalising the invisible world of those living with HIV/AIDS in South Africa, she attempts to capture the physical sensations of trauma drawing on her own unseen disability to create a direct emotional connection between subject, artist and viewer.

Gadsden feels the sensation of velvet when she touches skin, and her frenetic brushwork echoes the caress of skin as it is touched intimately. Threads of ribbon pierce through the surface of the artwork, infiltrating the body's system and invisibly weakening its defences. Nothing can prepare the victim for a positive result but, by focusing and drawing attention to the pandemic, it is hoped that in some way awareness is drawn to the ambition that there will be an HIV-free future generation.

Rachel Gadsden has recently returned from a six-week residency in Cape Town where she has been collaborating with the Bambanani Group who are based in Khayelitsha township. Together, they have been exploring notions of identity, survival in the face of chronic medical conditions and the politics of HIV.

In Jan 2011 Gadsden was awarded one of the thirteen commissions in the second round of awards for Unlimited – the ground-breaking programme that celebrates arts and culture by Disabled and Deaf artists on an unprecedented scale for the London 2012 Cultural Olympiad. It is one of three commissions in this round created in collaboration with international partners and with funding contributed by the British Council. Unlimited is principally funded by the Olympic Lottery Distributor and is delivered in partnership between London 2012, Arts Council England, the Scottish Arts Council, Arts Council of Wales, Arts Council of Northern Ireland and the British Council. http://festival.london2012.com/events/9000961761

www.unlimitedglobalalchemy.com

Rachel Gadsden, *Ubuntu*

Rachel Gadsden has a BA and MA in Fine Art and is a British visual artist, who exhibits internationally. Her artistic methodology is expressionistic, energetic and raw, echoing the deepest motivations of what it is to be human.

Rachel has been awarded many prizes and awards, including the Artsadmin Digital Media Bursary 2004, Dada Visual Artist of the Year 2005, Shrewsbury International Painting Prize 2006, Holton Lee International Disability Arts Prize 2007, *Momentum Arts Council UK and Dada-South Bursary 2009* and, in 2009, *Rachel* was awarded the Dada Awards International Arts Award. In 2011, Rachel was "commended" in the Freedom to Create 2011 Prize and FTC invited Rachel to Cape Town to exhibit and participated in their celebratory events that took place in South Africa in November 2011.

In 2007, Rachel was appointed Historic Royal Palaces first contemporary Artist-in-Residence at Hampton Court Palace and, in March 2009, was also appointed the first artist to work with Parliamentary Outreach for the *Breaking Barriers* Project and Exhibition 2009-2010.

Recent commissions include the Beijing-London Paralympics Handover Ceremony for Wheelpower UK at Stoke Mandeville Stadium and a collaborative performance commission with choreographer Mark Smith for the *Without Walls* festivals 2011.

Rachel has recently been awarded an International Unlimited London 2012 Cultural Olympiad commission, to create *Unlimited Global Alchemy* with the Bambanani Group of Khayelitsha Township, Cape Town.

www.rachelgadsden.com

Shelley James

Lesion 6

This work was inspired by the pioneering research of the ophthalmic surgeon Professor Andrew Dick and the Alzheimer's specialist Dr Shelley Allen, both at the University of Bristol. They describe the patient experience where information seems to get lost or recombined between eye, brain and mind. Signals normally pass from each eye, along the optic nerve, cross and divide at the optic chiasm before re-assembly in the visual cortex, triggering a cascade of physiological references and responses, including memory. When this line is physically broken, signals are lost; clinicians call this a 'lesion'.

Two large blown tubes loop together to suggest the optic nerves, but one is breached in the middle and open at both ends so that a jumble of imprinted beads representing information can be seen and may escape. The piece sits on a curved glass disc to suggest the Petri dishes used by scientists to study these phenomena.

Shelley James, *Lesion 6*

Shelley James following a first degree in textiles in Paris, Shelley James worked in corporate identity design in Paris, San Francisco and London.

An MA in printmaking at the University of the West of England in Bristol led to the discovery of glass. This was followed by residencies at the National Glass Research Centre in Sunderland, the Northland Glass Centre in Scotland and an Arts Coucil England Residency at the University of the Creative Arts in Farnham. Shelley is currently preparing a PhD the Royal College of Art in London alongside a Residency at the Bristol Eye Hospital, exhibiting and commissions.

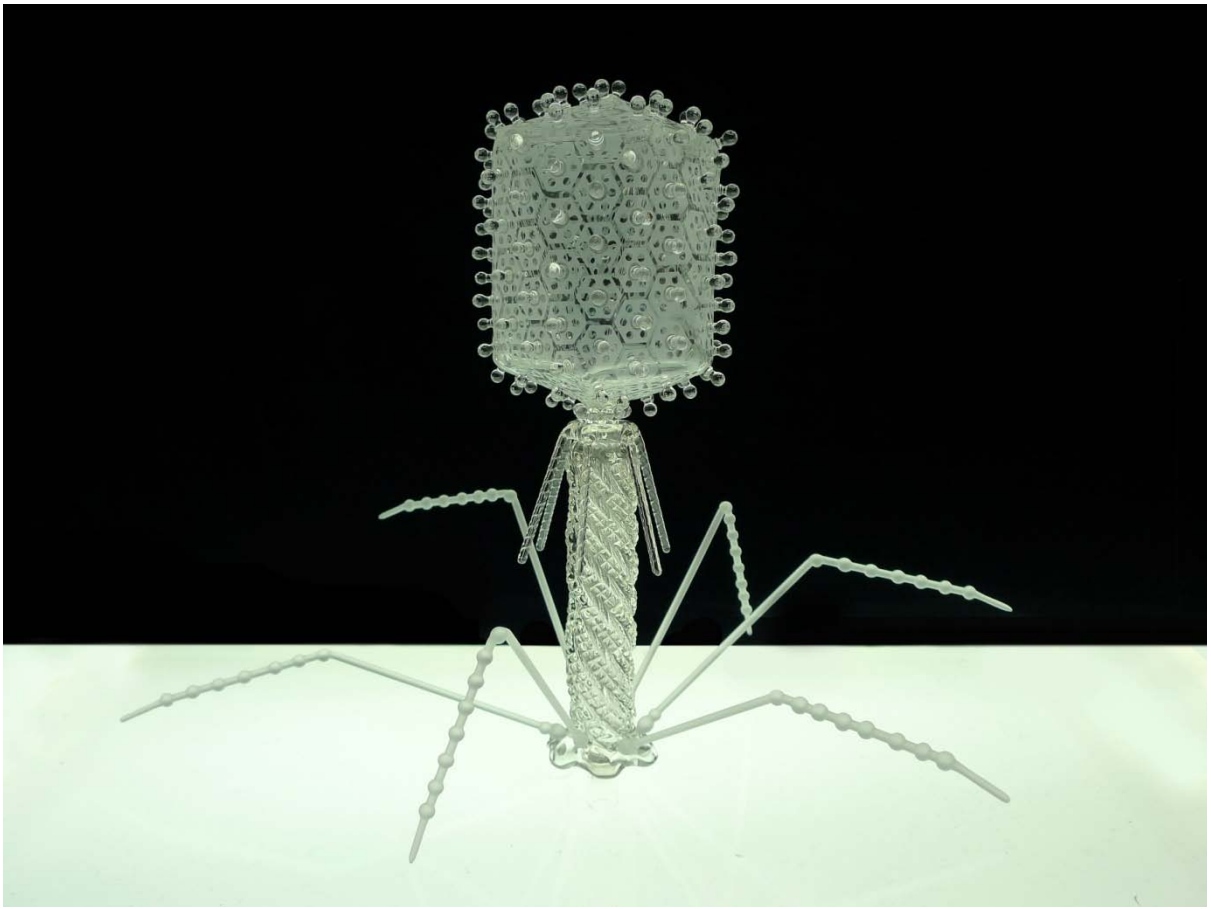
www.shelleyjames.co.uk

Luke Jerram

Glass Microbiology

The sculptures are designed in consultation with virologists from the University of Bristol, using a combination of different scientific photographs and models. They are made in collaboration with glassblowers Kim George, Brian Jones and Norman Veitch.

The glass sculptures were created to contemplate the global impact of each disease and to consider how the artificial colouring of scientific imagery affects our understanding of these phenomena. Jerram is exploring the tension between the artworks' beauty, what they represent and their impact on humanity.



Luke Jerram, *T4 Bacteriophage*

Luke Jerram's professional career began as an artist in 1997, Luke Jerram has created a number of extraordinary art projects which have excited and inspired people around the globe. Based in the UK, Luke Jerram's practice involves the creation of sculptures, installations, live arts projects and gifts.

Jerram's *Glass Microbiology* sculptures are in museum collections around the world, from The Corning Museum in NYC to the Wellcome Collection in London. In 2009, his sculptures were presented at The Mori Museum, Tokyo along with work by Damien Hirst, Warhol and Leonardo da Vinci.

In 2010, he was awarded the coveted 'Rakow Glass Award' for his work and in 2007 the 'Institute for Medical Imaging Award'. Jerram has recently completed a fellowship at the Museum of Glass, Washington, USA.

www.lukejerram.com

Andrew Krasnow

The Hollow Muscle

By medical definition, the heart is a hollow muscle. In less scientific terms, a "hollow muscle" might be seen as holding many meanings at once: the detached arbiter between life and death, the relationship between the inner and the outer, the representation of a people, the heart of a nation, or an object of emotional trauma desiccated by circumstance.

Personal recollections do not define a work as much as they inform it. With this caveat in mind, here is a remembrance...

When I was eight, my father had, among other things, created a heart resuscitation device for the home: he named it the *"heart reactivator."* One day, he brought it back to our house. It seemed as though it were one-part vice clamp and one part sewing machine with touches of wood panelling to make it fit, more or less, with the decor of any home in 1960s America.

It was adjustable and could accommodate a person of any size. It was designed to find the correct placement over a person suffering cardiac arrest and, with the flick of a switch, mechanically pound the chest, like a piston. The idea was to provide family members with the ability to administer chest compression CPR for their loved ones until help could arrive.

My recollection is that only a few heart reactivators were made. Perhaps the device itself was too foreboding to be welcomed into the home. Perhaps it became apparent that defibrillators were the future. Maybe it was simply too costly and learning CPR was more practical.

Although I wanted to take the HR-110 apart and see what made it tick, the prospect of using it terrified me. When it was first brought home, I was unsure if I had the strength, mental or physical, to be the "one-man rescue team" the pamphlet talked about. And what if I brought my father back from there and he wasn't the same? Of course, my father had no intention of burdening my psyche this way, but this is how a child's mind works.

My father had lived through three major heart attacks in the 1960s, his rib cage having been cracked open and wired back together twice for a new operation known as "the bypass." During one emergency room visit, he had been declared biologically dead before he sat up in the gurney. He knew very well that neither these surgeries nor this machine of his own making would save his life. The stitches and scars on his skin looked like errant train tracks.

In 1969, at the age of 49, having lived longer than his two brothers, my father died. All he ever wanted was to protect people from harm. Years later, my brother died at 39. After my third heart attack at age 45, I placed a catheter within *The Hollow Muscle.* Now visible along the side of the work is a tube suggesting a bypass graft and resembling an interior component from Heart Reactivator, Model HR-110.

Andrew Krasnow, *The Hollow Muscle,* lithograph

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 *The 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 gallery shows include Stux Gallery, NY, ADM Projects, LA and GV Art, 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.

In 2008, GV Art presented his installation *Of the Flesh* in its entirety.

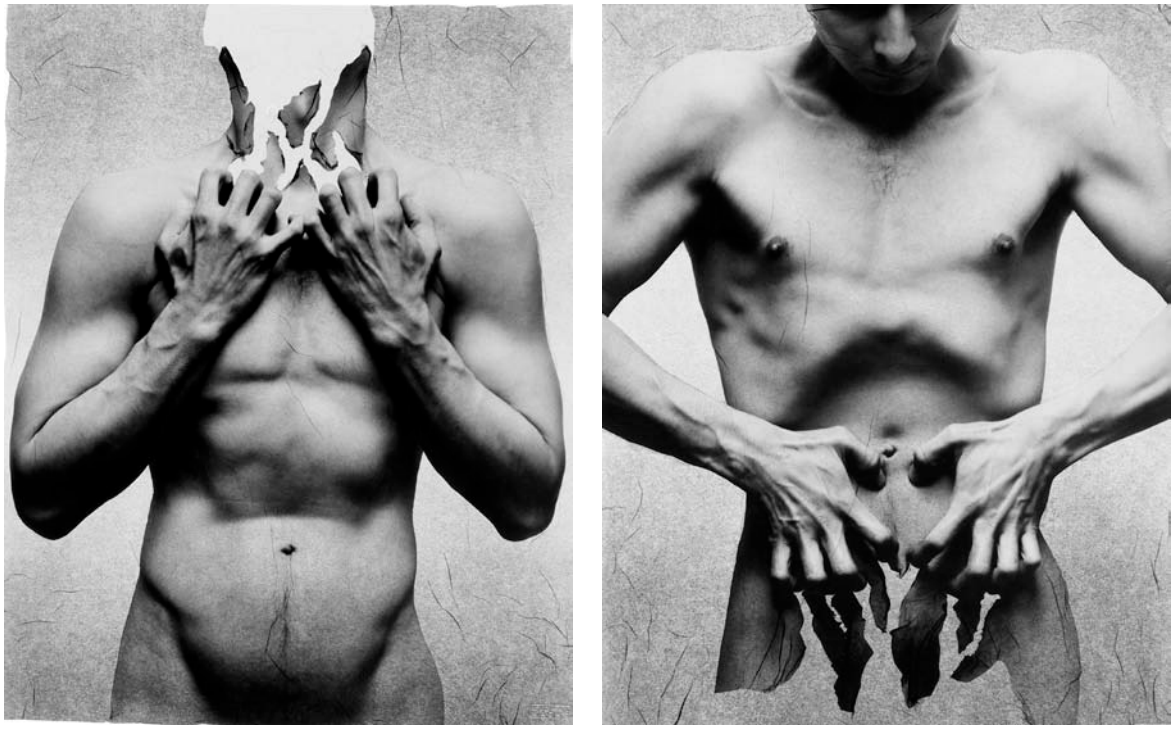
www.andrewkrasnow.net

Michal Macku

Untitled, No.83
Untitled, No.88

The need to break free of some unspecified trauma is depicted in Michal Macku's gellage works where the human form is literally torn in an effort to rid itself of the torments within. But it is uncertain as to whether the "interior landscapes" contained within reveal genuine and authentic liberation as hoped or simply momentary respite.

Here he appropriates the photographic technique he created in 1989; 'Gellage'- the ligature of collage and gelatine. Michal explains, 'I use the nude human body (mostly my own) in my pictures. Through the photographic process [of Gellage], this concrete human body is compelled to meet with abstract surroundings and distortions. This connection is most exciting for me and helps me to find new levels of humanness in the resulting work.'



Michal Macku, *Untitled 88 and Untitled 83*

Michal Macku with a passion for photography that started when he was 15, studied in Brno and Prague before working at the Sigma Olomouc Research Centre and teaching at the Pedagogical Faculty of Palacky University, Olomouc. Since 1992, he has worked as a freelance artist, exhibiting in the US and throughout Europe. In 1989, he created his own photographic technique, *Gellage* – the ligature of collage and gelatine.

Michal continues to use and develop this technology in his still-photo art. With the cooperation of Czech Television Brno, he has made an animated gellage film, called *Process*. Since 2000, Michal has used other historical photographic techniques in combination with the Gellage technique. After experimenting with heliogravure, platinum and kallitype, he mastered the technique of carbon printing. 'I am always seeking new means of expression', say Michal. 'In its versatility and range of possibilities, carbon is a superb process. It is capable of presenting images with a wide range of image characteristics, of virtually any colour or tone, and on a wide variety of surfaces'.

Michal's new work combines his gellage technique, historic photographic processes and state-of-the-art technology to create 3D glass photographs-objects.

www.michal-macku.eu

David Marron

Fallen Branches

Two anatomically influenced maquettes. Flayed in appearance, scarred. A man and a woman (a misshapen Adam and Eve). The figures standing upon the open page of a book (a doctor's manual for advanced trauma life support). The book itself separated at its spine and pinned down. Sprouting from between the broken spine of the book is the branch of a tree. A branch wrapped in the plaster bandaging used to heal broken limbs. In imitation of a tree of life, of knowledge, a trauma triage tree, a phylogenetic tree. Darwin resembled 'fallen branches' to extinct genera, species known to us only through unearthed fossilisation. The letter 'C' hanging from a branch, taken from Darwin's notebook sketch of his evolutionary tree. Also recognising the A, B, C approach to treatment within emergency medicine. Medical apparatus seem to grow from the other branches, like fruit.

The theme of a tree emerging from a broken book is influenced from the mythology of Hyacinthus, a Spartan who died from the impact of a discus striking his head. The Hyacinth flower grew from the place he died. Again, from Greek mythology, Adonis was slain by a wild boar and where his spilt blood infiltrated the soil, anemones appeared.

Images of a brain surround the supporting plinth highlighting the compensatory methods employed during an area of bodily failure. For example if the blood pressure drops vasoconstriction ensues helping to maintain the cerebral blood flow.

David Marron, *Fallen Branches*

David Marron

Severed Threads

A collage of the imagined debris found at the scene of a road traffic collision. The remains being the victims cut off clothes (necessary to reveal and treat injuries) and the medical paraphernalia used in their treatment. The objects gaining an emotional significance in being the discarded witnesses of a personal trauma.

A reference citing Atropos is included (one of the Greek and Roman three fates who determined a person's destiny). The sisters Clotho, Lachesis and Atropos, spun, measured and cut the thread of life. Atropos is often represented by the shears she uses to sever the threads; here, she cuts the plastic tubing to a fluid drip. The plant Atropa Belladonna was named after her, from which the drug atropine is derived and still employed within emergency medicine today.

A blood red rose here symbolises the internal bleeding or injuries sustained from the victims traumatic incident, exhibiting the unseen causes of outward deterioration. Roses apparently sprung from the ground where the blood of Francis of Assisi fell (injuries sustained whilst combating his physical urges by throwing himself into a thorn bush).

David Marron, *Severed Threads*

David Marron's work is underlied by a medical slant and is often influenced from his time occupied as a paramedic. This involuntarily stimulates intrigue toward the human body, to people. Not only anatomy, physiology, disease, injury and medicine, but the emotive aspect – people's response and behaviour, testimonies of human frailty and durability.

Endeavouring to reproduce this emotive response within an artwork. Not as a direct replication but in attempt to stimulate another's empathy. The inclusion of symbols: objects, words and imagery act as references to relating literature, to art, history, mythology and science. An attempt to make an art work that arrests on a visual level and communicates from the gut and with the intellect.

www.davidmarron.com

Darragh O'Callaghan

Focus Point

I build a wall around myself, creating a haven, a safe spot that becomes my home, my dream tower.
But I am now trapped, I can't get out.
And there's nobody there to help.
This is not a performance. This is reality.

Darragh O'Callaghan

Concrete Feet

Concrete is used more than any other man-made material in the world, usually in construction for infrastructure and highways. As of 2006, about 7.5 billion cubic metres of concrete are made each year – more than one cubic metre for every person on Earth.

The smooth-flowing matter gushes around my bare feet, solidifying to a ridged mass.
It is a weight borne on my feet, holding me down to the ground.
Its power and strength so strong that it expels an acidic matter that eats to the core of my bones.

Darragh O'Callaghan graduated from IADT Dun Laoghaire in 2007 and The Royal College of Art London in 2010. She was the youngest artist to take part in *Video Apartment* in 2009 in which her work was screened alongside Marina Abramoviç, Rineke Dijkstra and Paul McCarthy.

She has taken part in exhibitions in Dublin, Norwich, Bratislava, Berlin, Bangkok, Bremen and Japan. Having taken part in residencies in Bremen and in Bangkok in 2008, she will take up two residencies in Beijing in 2012.

Darragh has won awards and grants, such as Bank of Ireland Scholarship Award (National Award), Monaghan County Council Award for contribution to Arts, Monaghan County Council Professional Artists Award, Aileen Mc Keogh Award and Culture Ireland grant for her work.
Her work has taken part in the publication, *Picking Up Bouncing Back*, Alexander Garcia Duttmann & Jean-Luc Nancy, RCA Photography

www.darraghocallaghan.com

Anaïs Tondeur

Hebarium Of Surviving Specimens From The Exclusion Zone

The Chernobyl nuclear accident occurred on Saturday April 26, 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 30 kilometres of exclusion zone surrounding Chernobyl nuclear plant is now being re-opened and reveals itself as a place for opulent wildlife.

The *Hebarium: Specimens From The Exclusion Zone* is based on the research undertaken on plant genetics by Institute of Plant Genetics and Biotechnology at Slovak Academy of Sciences and looks at 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 test the impact of the radiation on the flora.

The imprints of the specimens are caught through a photogram process, technique that 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, I interrogate 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 atomic explosions have illuminated and scarred the mind.

Anaïs Tondeur, *Hebarium Of Surviving Specimens From The Exclusion Zone*

Artist Biography

Playing with the techniques of the observer, **Anaïs Tondeur** looks for shift in the viewer's perception of the real and explores the role of sensorial experiences in an encounter with an object of knowledge. She develops narratives structures that are considered as means to fictionalise the real in order to reflect upon it.

Anaïs Tondeur studied at Central Saint Martin's School and a Masters in Mixed Media at the Royal College of Art, London. Her practice has included exhibitions and residencies in Paris, London, Detroit, Germany and the Netherlands.

Scientist Biography

Martin Hajduch is a Slovak scientist from the Institute of Plant Genetics and Biotechnology SAV in Nitra, and researches on plants soy and flax seeds in contaminated soil nearby the Chernobyl in Ukraine. These seeds are the key to the process of examination of the ability of plants to adapt to increased radioactivity in environment.

His research has caught the attention of major media names such as *The New York Times*, the BBC and the prestigious journal *Science*. Currently, he is aiming to determine to what extent are second and third generation plants able to pass on their resistance to radioactivity to their offspring.

www.anais-tondeur.com

William Utermohlen (1933-2007)

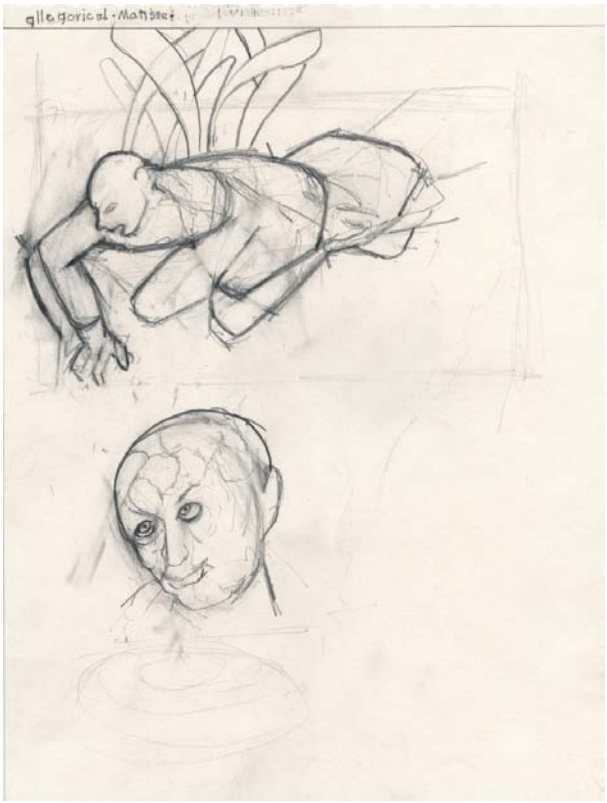
Broken Figure

In *Broken Figure* 1996 the artist focuses on his physical decline. He has depicted himself as a dislocated puppet. Geometric diagrams, of the kind given to dementia patients to draw as tests, loom ominously above him with laboriously scribbled lines at his right foot. His doctors want to know if William can still memorize a list of words, complete a simple subtraction, name ordinary objects, or copy geometric shapes. The humiliation of failing to answer these simple questions shatters his self-confidence.

William Utermohlen (1933-2007)

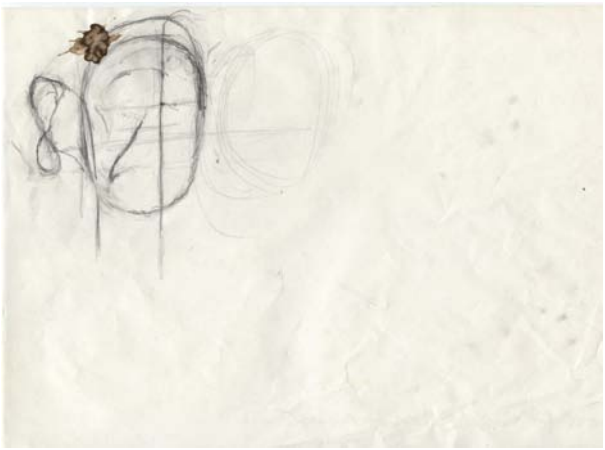
Fallen Figure and Head

Falling characterizes the notion of loss of bearings – the artist stumbles, he is no longer secure on his own two feet. There is also a searching quality to the figure, searching yet not finding. The head with the crazed expression and swollen scull points also to the artist's consciousness and obsession with what is happening to his deteriorating brain.



William Utermohlen (1933-2007)

Head (with coffee stain)



In analyzing the late heads drawn in pencil by William Utermohlen the psychiatrist Dr Patrice Polini states: "The artist has assimilated his drawing method to his destiny: to subsist while disappearing. Perception can still call forth a primal image. But what emerges is also foreign and threatening to the artist's sense of self." The absence of features, eyes, nose, mouth can be linked to the artist's consciousness of losing the 5 senses and his connections to the world. The prominence of the ear signals an attempt to keep (in an almost desperate manner) to preserve a last connection, the sense of hearing. From an artistic point of view the protruding ear shows and ingrained memory of earlier self-portraits with a similar positioning of the ear. The prominence of the scull points to the artist's consciousness and obsession with what is happening to his deteriorating brain. The coffee stain points to a loss of bearings, as the artist in no longer careful in the production and safekeeping of his work as his motor skills and memory fade.

All three images are the result of physical and psychological trauma.

What is remarkable is the artist's willingness, despite his fear and pain, to confront and define this trauma. William Utermohlen applies his now more limited means to defining artistically his condition, fighting to preserve a sense of self and an artistic identity. It is a most remarkable and brave struggle. It also proves how draftsmanship is a deeply ingrained skill, imminently adaptable to dramatically changed conditions of perception.

William Utermohlen graduated from the Pennsylvania Academy of Fine Arts in 1957, where he studied under Walter Steumfig. He studied at the Ruskin school of art in Oxford in 1957-59. He settled in London in 1962 and married the art historian Patricia Utermohlen in 1965. He died from the consequences of Alzheimer's disease in March 2007.

www.williamutermohlen.org

Jacek Wankowski

Encrustations Samurai Blade

The spectre of disease and infection, of something alien encrusting our body and growing on and into our skin terrifies us. *Samurai Blade* is a stainless steel encrustation, growing over our weathered, vulnerable and exposed bodies. We struggle, twist and turn to free ourselves, rub and scratch on the ground to tear the encrustations off – all to no avail, as the surface growths prevail and spread over and deep into our being, like a twisting knife or a sword blade thrust.

Encrustations Samurai Blade

Jacek Wankowski (as the artist) originally trained and worked internationally as a marine biologist, is a keen SCUBA diver and international traveller and draws upon these experiences to inform his practice. Since graduating in 2006 from the National Art School in Sydney, he has exhibited his large scale outdoor sculptures and smaller, intimate indoor pieces internationally in numerous group and solo exhibitions in London and Sydney, throughout the UK and in the Hunter Valley. His work is in private collections and on public display in Australia and the UK.

Jacek Wankowski exhibits with the Brenda May Gallery, Sydney, is an Associate Member of the Royal British Society of Sculptors and The Sculptors Society (NSW).

'My sculptures are predominantly made in steel and range from large-scale outdoor pieces to smaller, intimate works – a play between the small and the large scale, between intricacy and simplicity. Inspired by observation of pattern and form in the natural world and spatially activated by the distribution of their mass, they embody movement and anticipation, and often a sense of unfolding or unwrapping.'

Jacek Wankowski (as the scientist) trained at the University College of North Wales, Bangor, graduating with a First in Zoology with Marine Zoology. He then worked in New Zealand at the University of Auckland's Leigh Marine Laboratory and subsequently obtained his PhD in Fish Biology at the University Of Stirling, Scotland.

Jacek has worked in marine and fisheries research in Scotland, Papua New Guinea and Australia. His field has included studies in behavioural ecology, feeding behaviour, migration, population studies, fishery dynamics, growth and reproduction. Primarily interested in fish, he has studied a range of species from small tropical baitfish, through shallow-water bottom-dwellers to open-water pelagics and deep-water species. His research has also included

intertidal shore crabs and Fairy Penguins.

Jacek has travelled widely in a professional capacity and has undertaken informal exploration/study of coral reef ecosystems in East Africa, Papua New Guinea, Bougainville and the Great Barrier Reef.

His research has been published in international journals, reports and monographs.

Jacek is now a full-time sculptor and no longer works professionally in the scientific field.

www.straylightstudio.com

LIST OF EXHIBITS

Susan Aldworth

Apoptosis 6
Acrylic and latex on canvas, 2009, 98 x 129

Transition 1, 3 and 5
Lenticulars, 2010, Edition of 70, 50 x 60

Suzanne Anker

MRI Butterfly #5
Digital print on watercolour paper, 2008, A/P, 49 x 33

Dr Jake Burrell

Tumour Microvessels

Dr Megan Dowie

Neurodegeneration: an example of chronic trauma at the cellular level

Katharine Dowson

Radiotherapy Patient 10
Glass, 2011, Series of 3

Charlie Franklin

Matter
Wall based sculpture, expanding foam, metallic paint, thread, wooden shelf, 2011, 40 x 33 x 46

Rachel Gadsden

Ubuntu
"I am what I am because of who we all are"
(From a translation offered by Liberian peace activist Leymah Gbowee)
Acrylic, chalk and ribbon on velvet, 2011, 146 x 190

Dr Steven Gentleman

Microglial cells: friend or foe?

Shelley James

Lesion
Hot glass, float glass, industrial graining beads and ceramic transfer prints blown by Louis Thompson, 2009, unique, 33 x 52 x 52

Luke Jerram

Glass Microbiology

Large Spiky Malaria
Glass, 2010, Edition 1 of 5, 50 x 19

Small Untitled Future Mutation
Glass, 2011, Edition 6 of 20, 10 diameter

Untitled Future Mutation, Series 2
Glass, (Beaded interior), 2011, Edition 1 of 5, 23 diameter

Small HIV, Series 2
Glass, 2010, Edition 3 of 5, 10 diameter

Large HIV, Series 2
Glass, 2011, Edition 3 of 5, 21 diameter

T4 Bacteriophage
Glass, 2011, Edition 3 of 5, 30 x 40

Papilloma
Glass, 2011, Edition 1 of 5, 20 diameter

Small SARS
Glass (Beaded Interior), 2011, Edition 1 of 5, 12 diameter

Andrew Krasnow

The Hollow Muscle
Lithograph, 2006, Paper size 21 x 15, bleed image, Paper: Fabrianno water colour 190gms, Printed by: Toby Michel, Angeles Press, Edition of 31 + 1AP

The Hollow Muscle
Human skin, thread and catheter, 2000, 22 x 23 x 17

Michal Macku

Untitled, No.83
Gellage, 2000, Edition 6 of 12, 79 x 66

Untitled, No.88
Gellage, 1999, Edition 6 of 12, 79 x 66

David Marron

Fallen Branches
Mixed media, 2011, 174 x 55 x 40

Severed Threads
Mixed media, 2011, 184 x 61 x 20

Darragh O'Callaghan

Focus point
Pencil on paper, unique, 20 x 29

Concrete Feet
Screen print, Edition of 7, 13 x 12

Anaïs Tondeur

Hebarium of surviving specimens from the Exclusion zone
Photogram, 2011, C-Print on RAG Paper, Edition 1 of 10 + 1AP, 43 x 33cm

Location: Exclusion Zone, Chernobyl,
Ukraine
Radiation level : 1.7 microsieverts per hour

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,

William Utermohlen

Broken Figure
Ink and pencil on paper, 1996, 34 x 47

Head (with coffee stain)
Pencil on paper, 2001, 21 x 30

Fallen Figure and Head
Pencil on paper, 1996, 27 x 20

Self-Portrait with Easel (Yellow and Green)
Giclee, 1996, Edition of 150, 46 x 35

Self-Portrait (with Easel)
Giclee, 1998, Edition of 150, 36 x 25

Erased Self-Portrait
Giclee, 1999, Edition of 150, 46 x 36

Self-Portrait (Green)
Giclee, 1997, Edition of 150, 36 x 36

Jacek Wankowski

Encrustations Samurai Blade
Stainless steel, weathered mild steel, 2011, unique, 90 x 75 x 55

GV Art

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 humans interpret and understand 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.

Dr Jonathan Hutt – Curator

Jonathan Hutt obtained a PhD in Chinese History from the Australian National University. He specialises in Chinese intellectual history of the late Qing and Republican eras. His particular field of interest is the awkward and ambivalent relationship that developed between China's intellectuals and the modern Chinese metropolis in early - twentieth century and how such dynamics continue to inform cultural, social and political debate within the Greater China region to this very day.

His work attempts to chart the evolution and revolution of these tumultuous relationships by exploring the psychological landscapes of the Chinese intelligentsia and their manifestations in poetry, prose, fiction as well as the fine and decorative arts. More importantly his work hopes to illustrate how these cities of the imagination play a critical role in the mythologization of China's premier cities both at home and abroad.

Jonathan has contributed to numerous scholarly journals including *East Asian History* and *The China Journal*. He is also a regular contributor to the prestigious online journal, *China Heritage Quarterly*.

As an independent curator he has worked with GV Art on a number of previous exhibitions such as; *Of the Flesh* by Andrew Krasnow and *Artist without a Head* by Albert Binimelis-Mulet.

Bojana Popovic – Co-Curator

Bojana Popovic is currently finishing her Undergraduate Degree in History of Art at the Courtauld Institute of Art. Whilst attending St Marylebone Secondary School just around the corner from GV Art, she began building and enriching her art history interests. Fired by her enthusiasm for the subject, which her school did not offer at A-Level, Bojana organised a consortium with Francis Holland School in 2007. This unique opportunity strengthened her existing love for art which she fuelled with her out of school activities.

Bojana began volunteering at Somerset House from the age of fourteen and since then has gained experience working in various gallery situations – helping run school workshops, guided tours, as well as working on large public events such as London Fashion Week. Through her university she pursued this further by doing Lunchtime Talks on paintings in the Courtauld collection throughout her BA.

To gain a further insight into curating specifically, Bojana has been interning at GV Art in 2011.

BRAIN BANK DONOR FORM

If you are interested in donating your brain for medical research and in particular for assisting in the research of Parkinson's or Alzheimer's then please register your interest for donating your brain to a brain bank, using the links below. Both Brain Banks are also keen to recruit healthy donors i.e. people without neurological disease, since such brain tissue is also vital for research into these diseases.

Alzheimers - www.alzheimers.org.uk

www.brainsfordementiaresearch.org.uk/info/1/register_as_a_brain_donor

Parkinson's - www.parkinsonstissuebank.org.uk

Or www.parkinsons.org.uk

www.parkinsons.org.uk/research/parkinsons_uk_brain_bank/become_a_brain_donor.aspx#joining_the_brain_donor_register or http://tinyurl.com/dxax3ug

TRAUMA
The Art and Science of Trauma

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www.gvart.co.uk

heart reactivator

click here to return

sewing machine

SECTION 5

the ASE Heart Reactivator

The ASE Heart Reactivator is designed to furnish the breathing and circulation assistance cycles recommended for grown persons by the leading authorities in the field of cardiopulmonary resuscitation:

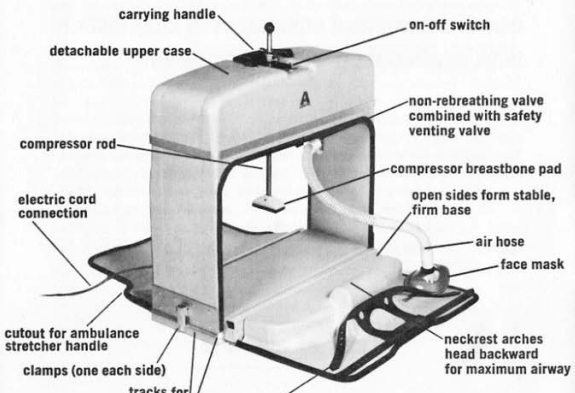
A. Airway is opened and maintained in open position;

B. Breathing support is administered 12 times per minute, delivering a liter of air to the lungs every fifth second; and

C. Chest is compressed 60 times per minute with the pressure needed to force the breastbone down 1¾ inches.

THE TIMING AND THE MAGNITUDES OF THESE ACTIONS ARE REGULATED AUTOMATICALLY. THERE ARE NO DIALS, KNOBS, OR LEVERS TO ADJUST.

The machine is in the form of a portable "life-saving suitcase." The lower section folds out to become a firm base for supporting the patient; the upper section, which is detachable, houses the operating mechanisms.



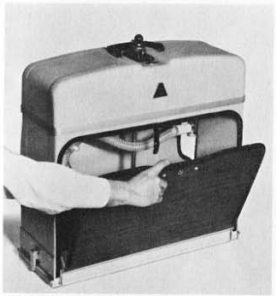
instructions for use

the ASE Heart Reactivator can be put into use by a trained rescuer in 45 seconds or less by these four major steps:

1. OPEN THE CASE;
2. POSITION THE PATIENT;
3. ADJUST UPPER CASE TO PATIENT; and
4. START THE MACHINE.

The following detailed steps must be performed in the indicated order:

1. OPEN THE CASE:
   - **a.** Pull out the flaps.
   - **b.** Unlock the clamps at each end.
   - **c.** Remove the upper case and set aside.
   - **d.** Pull up the compressor rod.



Open case and fold down sides.

Remove upper case with power unit.

click here to return

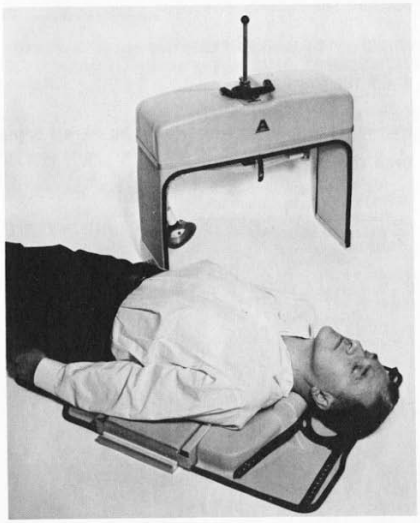
a person suffering cardiac arrest

2. POSITION THE PATIENT ON THE BASE:

a. Roll or pull the patient on to the base (or slip it under him if assistance is available) so that his neck rests on the raised neck-rest. (The neck is thereby fully arched, and maximum opening of the patient's airway is achieved).

b. Center the patient's body along the length of the base (so that his breastbone will be directly in line with the chest compressor pad).

c. Apply mouth-to-mouth respiration briefly to make sure airway is open; remove obstructions with your finger (see page 11).



Slide patient onto base, so that neck lies on roller and body is centered.

3. ADJUST THE UPPER CASE TO THE PATIENT:

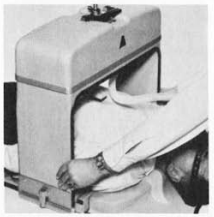
a. Replace upper case on tracks –

a. Place the upper case over the patient, back into the tracks of the base (do not lock clamps).

b. Place mask on face and attach headstraps.

b. Pull the air hose from its clamp and place the face mask* over the patient's mouth and nose; lock the face mask in place by buttoning on the headstraps, pulled tight. Attach the two lower headstraps, nearer the shoulders, first. (Because the headstraps are attached to the base, the patient's neck is *fixed* in maximum arched position.)

**The inflatable collar of the face mask should be kept inflated at all times, ready for use. It should be checked periodically.*



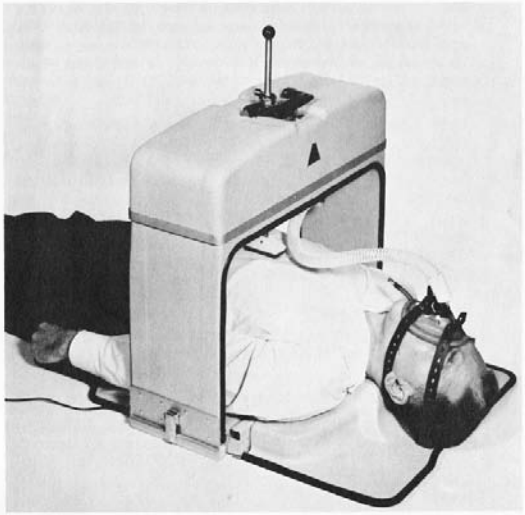
d. Slide the upper case until compressor pad is over lower half of breastbone.

click here to return

until help could arrive

6. CALL FOR MEDICAL HELP

As soon as you are certain that the patient is receiving positive breathing and circulation assistance from the machine, the attendant should call for medical assistance. In a hospital situation, the resuscitation team should be summoned at once. Outside the hospital, send for an ambulance to get the patient to a hospital as soon as possible. Also be sure to notify the hospital that a cardiac arrest case is being brought in, so that a resuscitation team will be ready when the patient arrives.



TO ASSIST YOU IN RECALLING THE CORRECT ORDER OF THESE STEPS 2 plaques containing a checklist are conveniently mounted in the machine.

The precautions described on page 14 are generally applicable to machine use.

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click here to return

one man rescue team

the ASE Heart Reactivator

exclusive features

. . . Truly portable and self-contained.

. . . Uses only electricity and air, permitting uninterrupted sustained use.

. . . Produces optimum heart compression and lung ventilation automatically — no complicated adjustments, no subjective judgments.

. . . Attached headstraps maintain maximum airway opening.

. . . Attendant can leave the patient to call for medical assistance with assurance that the patient's needs will continue to be met.

Compression Stroke Preset at optimal distance of 1¾ inches, assuring maximum cardiac output.

Ventilation Volume Preset at 1 liter.

Automatically Integrated Cycling, 60 compression strokes and 12 ventilations per minute, as recommended by the American Heart Association.

Positive Airway Opening achieved by forced arching of the neck, positioning the lower jaw and tongue forward.

Air Pressure Release Valve preset at 40 cm water pressure, to prevent overdistension of the pulmonary system and the stomach.

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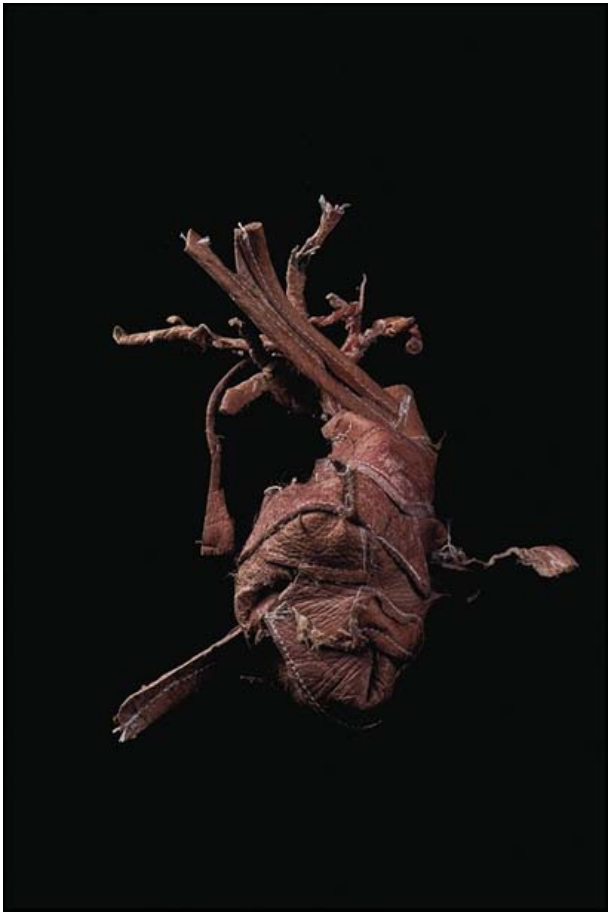
from there



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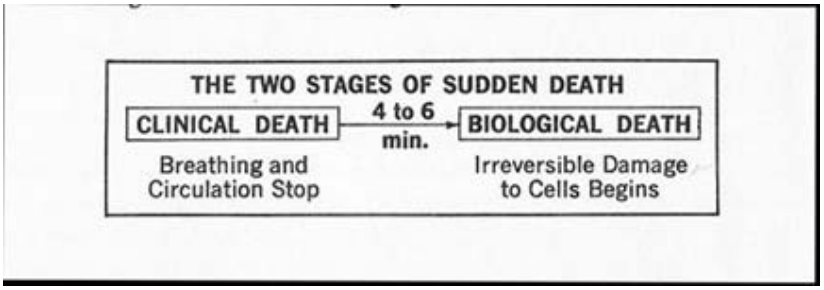
biological death



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side of the work with catheter, detail

click here to return