Ways of Knowing
List of Abstracts in Alphabetical Order

Kerry Andrews, Visiting Lecturer in Fine Art

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Abstract: 'Thinkers in the Empirical World'

The title of this symposium provokes some fundamental questions. The title references, at least in some way, C P Snow's 'two cultures' and it therefore implies that there are fairly general definitions of what art and science are and can be, that there are defining identifiable characteristics of 'art' and of 'science' that essentially separate the two.

Perhaps we should think of these two areas of activity and research as constellations and that there are areas of these constellations that will inevitably have correspondences with each other – or, more radically, that some sections of one constellation will have closer affinities with parts of the other constellation than between the further reaches of its own. In my own work I feel closer ties with some ideas in physics or biology than I do with other artworks.

John Brockman writes "The third culture consists of those scientists and other thinkers in the empirical world who, through their work and expository writing, are taking the place of the traditional intellectual in rendering visible the deeper meanings of our lives, redefining who and what we are." His phrase "thinkers in the empirical world" has more to do with a practical investigation/response and its corresponding theorisation of the world. It seems to me that this is a similar position to that of fine art in the university environment – in that its relation to and categorization as 'research' creates a challenge to the traditional notion of academic research and to a narrow academic definition of intellectual activity/practice. Perhaps there is a lesson here from the third culture scientists that fine art research will also need to explore its own expository writing to become clearer in sharing its ideas and their relevance to a broader understanding of who and what we are.

Professor Simon Biggs, Edinburgh College of Art

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Abstract: Between zero and one: on the unknown knowns

"There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we now know we don't know. But there are also unknown unknowns. These are things we do not know we don't know." Donald Rumsfeld.

This infamous comment of February 12, 2002, by US Secretary of State for Defence Donald Rumsfeld, concerning the lack of evidence linking Iraq's government to the supply of terrorist groups with weapons of mass destruction, was widely ridiculed. Amongst many other "accolades" it received the Plain English Campaign's 2003 Foot in Mouth Award. However, it could also be seen as evidencing a subtle appreciation of epistemology. The implication of this matrix is that knowledge can exist in a variable and uncertain state and yet still function as useable and applicable knowledge upon which action can be based.

Charles Peirce argued that artists can arrive at choices through a hunch, a form of reasoning he termed abductive. Within this epistemological model elements of knowledge might be

considered of uncertain status but nevertheless able to be employed on the basis of an intuitive sense that something might be so. The argument here is that what is the case for creative practitioners, in the exercise of their pursuit of insight and affinity (a kind of knowing), is also the case for those working within those domains concerned with the rigorous pursuit of knowledge. Another example of reasoning that is less than black and white in its methods is found in computing theory. The notion of fuzzy logic, derived from fuzzy set theory, has gained popularity in data analysis applications designed for dealing with complex real-world data-sets. This is a method of algorithmically modeling decision making processes where much of the data required to make a choice is in an unknown state, neither a zero nor a one but something in-between.

This paper entertains ways of knowing that avoid the binaries of truth and falsehood in favour of gradations in the states of things, questioning more conventional epistemological models.

Dr Craig Bourne, Senior Lecturer in Philosophy

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Abstract: Representations of Time in Art and Physics

My talk will consider various forms of representation and what they can tell us about the nature of time. These forms of representation are available to both science and art. Pictorial representations may take the form of paintings (e.g., those apparently depicting movement over time) or of scientific diagrams (e.g., Minkowski space-time diagrams). Linguistic representations may take the form of sentences of natural language, as in novels, or of equations, as in physics. I will argue that drawing conclusions about the nature of time from these representations requires an understanding of the metaphysics of time, which cannot be gained from the representations alone.
I will look at three case-studies which illustrate how these representations of time become, without careful handling, misrepresentations. These are drawn from three major scientific theories of the twentieth century. First I show how the Special Theory of Relativity has no resources for singling out a particular time as present, and I argue that this is also the case for fictional representations of time. Second, I discuss how solutions to the field equations of General Relativity generate a representation of time-travel, and I compare this with artistic representations of time-travel. Third, I compare representations of branching time in quantum mechanics with cinematic representations of branching time. Each of these cases illustrates something different about the limits on what a representation of time can tell us about how the world really is. The moral to draw from all these cases is that, in addition to learning from each other's representations of time, scientists and artists should work with philosophers in order to be sure that the inferences drawn from the representations are valid.

Monia Brizzi - Practicing Chartered Psychologist, London

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Abstract: The Science of Psychology and the Art of Psychology: Difference or Continuity?

The theory and practice of psychology are dedicated to the advancement of rigorous scientific inquiry into human experience, but could they also be described as forms of art? Are non-linear complex systems such as human beings explained, or explained away by invariant principles and cause-effect categories? How can we understand the relationship of singularity to universality in psychology?

Disciplinary subject matters are not separable from modes of knowing. If the discipline of psychology is grounded upon evidence-based practice and practice-based evidence, it becomes crucial to ask what counts as evidence, and what is excluded from counting. If the meaning structures of experience, perception and consciousness always involve and are an expression of a partial selection and abstraction, then both the scientific subject matter and methodologies of psychology are already implicitly deeply aligned to creative processes, which challenge scientific ontic accuracy. The paper will also consider the applied implications of crossing disciplinary boundaries and of nonfoundational relatedness for social welfare, inclusion, and progress.

Mario Caeiro, curator Skyway Festival of Art and Astronomy, Torun, Poland

http://www.skyway.art.pl/program

Abstract: Emancipating the Rational

I will discuss my work as a cultural programmer and curator focusing on my current role as director of the Skyway Festival of art and astronomy that situates light-based and performative art in the public realm. I am interested in the way that scientific ideas are disseminated by events such as this and how they interact with various audiences. How do artists and scientists interact through collaboration and through discussion of ideas? How are the historical boundaries between disciplines, their rationales and systems of power challenged? What is needed is an engagement with rationality that, not forgetting intuition and serendipity, allows art to have a broader sociological function in a techno-scientific world and for art and science to co-invent an intelligent community to come.

Contemporary public art, in its critical and experimental forms, is possibly a specific *way of knowing* which the mainstream understanding of art is largely unaware. One can trace its *ethos* – if not its complex *logos* – to a German thinking about totality from the Romanticism of Novalis and Wagner to more recent KulturKritik and to the philosophical/political positions interested in the capacity of art to contribute to the emancipation of the rational (Rancière or Guattari). How can a genealogy of critical art – affirmed since the 60's as a response to technological entropy, such as with Beuys's dialogical work –, become a partner in truly meaningful meetings between the scientific and the artistic rationales? How can the publicness of art contribute to the critique and communication of science?

Amiy Chatley, doctoral student, Computer Science

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Abstract" Theatre in Human-Robot Interaction Research"

Abstract- "In the field of Human-Robot Interaction (HRI), a novel experimental methodology is presented for carrying out user studies. The methodology uses a theatrical presentation with an actor interacting and cooperating with robots in realistic scenarios before an audience. The scenarios included real world tasks, such as fetching food, asking user preferences, reminding the user of their schedule and noticing changes in the environment that the user may need to know. These tasks cover three main areas of investigation relevant to future domestic or service robots; Fetch and Carry tasks, Interaction, and Agent Migration.

This methodology has been inspired by previous research in Human-Computer Interaction regarding product development, and also utilises an actor to present new technology products

to an audience. The actor also stays in role for a post-theatre session with the audience, answering questions and encouraging the audience to discuss their respective opinions and viewpoints relating to the HRI scenario enactment. The actor is assisted by a facilitator who deals with questions outside of the actors in-character sphere of understanding. Using the audience responses for direction, any gaps in the discussion are bridged by the actor. The development and running of a first exploratory pilot experiment using the new Theatre HRI (THRI) methodology is explained and critically reviewed in this presentation. Based on this review and the associated findings from the audience discussion session, it is concluded that the Theatre-based HRI (THRI) methodology is viable for performing HRI user studies. For more details of this study see Chatley et al. (2010)."

Dr James Collett, Principal Lecturer in Astrophysics

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Minuscule to Majuscule – Natural Calligraphy

The subject of this talk is how lines unfold in the world and the qualities they share with, and might add to, the drawn line. The minuscule is scripted in the quantum mechanical hand where many exploratory lines are sketched simultaneously but with differing weights. The majuscule is represented by evolving lines projected in space by thin ribbons of stars similar to the turning cusp of a flock of birds. Classical chaotic trajectories have already interested artists and there is even evidence that the resulting visualizations, for example Ellsworth Kelly's colour codes, can be practical tools in assessing data. Here though we will be concerned less with the representation of a given path: our topic is the dynamic evolving line - as simple and as complicated as a glycerine stream falling into water.

Anna Dumitriu, artist

www.unnecessaryresearch.org

Abstract: On the Shoulders of Giants: Methodologies for Art and Science Collaborative Practice

Should artists and scientists work together? What can each party gain? Is it a simple exchange of ideas or are other factors at work? Through this talk we will look at various models of collaboration critically; discuss philosophy of science and how this might impact on projects and approaches; consider some of the ethical implications of working with science; look at art as a means of developing public understanding of science and look at the work of a number of artists working with science (e.g. The Tissue in Art Project, Eduardo Kac, Adam Zaretsky, Stelarc, Kira O'Reilly and Anna Dumitriu).

Workshop: Creative Communication: Art and Science Collaboration in Practice
A practical hands-on workshop for artists and scientists interested in finding ways to work together practically, this workshop will look at methods of developing collaborations and the issues that arise. Participants will develop art/science experiments (note how the word 'experiment' is already placed in contention here) and develop an understanding of the different methodologies that may be involved. But above all you will get to unleash your creativity and learn what it's like to work with together. The workshop builds on Dumitriu's tried and tested methods for teaching collaborative art/science practice run by the University of Brighton and Brighton and Sussex Medical School.

Rob Godman, Reader in Music

http://web-apps.herts.ac.uk/uhweb/about-us/profiles/profiles_home.cfm?profile=D9F1EA08-DD0B-3027-BCADD0C60CFF51DA

The Ryan Belson Tribute

This is a paper! However, it will be presented as a performance of live and responsive audio/visuals (which include text) without the need for additional verbal explanations.
The work focuses on the author's interest in misguided art justifying equally misguided science and attempts to address the current arguable premise of art and science being cosy bedfellows.
The science within The Ryan Belson Tribute is quite true.

Anyone with a basic understanding of the physics of sound will realise we can hear and capture sounds from the past.
In 2002, I developed a technique for listening to sounds in a building that had originated there many decades previously. The system works flawlessly, apart from one or two issues to do with time... (and, let's face it, nobody really knows what time it is anyway)
Sound will be projected over the UH Diffuse system with a very disobedient Lemur.

Rob Kesseler, Professor of Art, Central Saint Martins College of Art and Design

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Abstract: Science and sensibility: Image and Engagement

For centuries scientists and artists worked side by side in the study and depiction of the living world. From flora to fossils and from minerals to microorganisms, the dissemination of new information relied as much upon accurate visual description as it did on the written word. Whilst it is often thought that artistic creativity was subservient to the need for scientific accuracy, it cannot be denied that greatest scientific artists and illustrators created works whose power to engage new audiences rose above their apparent functional roles. Indeed one might argue that the unabated passion for gardens and plants owes as much to the creative skills of generations of botanical artists as it does to the plant hunters who brought back exotic specimens from around the globe.
During the nineteenth century with the emergence of photography and the development of more powerful microscopes, the extension into microphotography and its impact on visualizing this new *microscope* was swift and far reaching. Imaging at a microscopic level was placed in the hands of the scientist alone so that the rapidly advancing technologies became an inadvertent gatekeeper that precluded dialogue and collaboration between artists and the scientists. Notwithstanding a few exceptions, this situation was reinforced during the first half of the twentieth century as equipment became increasingly more complex, expensive and locked within research establishments, beyond the reach of most artists. Added to this was often a failure of institutions to recognize a popular audience for the material they were generating.
Towards the end of the 20th century an emerging belief in the value for dialogue and cross collaboration between artists and scientists coinciding with a digital revolution, created a common platform across both communities. 'Science and sensibility' will explore some of the processes, approaches and opportunities involved in working is this emerging field.

Dr Brendan Larvor, Principal Lecturer in Philosophy

http://web-apps.herts.ac.uk/uhweb/aboutus/profiles/profiles_home.cfm?profile=D9F0C533-9B94-30D1-F765ACE3CA71F03E

Abstract: Themes and Motifs in Music and Mathematics

We naturally think that mathematical knowledge is made of theorems, secured by proofs. We also have a natural tendency to organise mathematics thematically into algebra, geometry, analysis and so on. These perceptions are not false, but there are other ways of conceiving and connecting mathematical knowledge. There are large overarching themes, such as space, quantity, reciprocity, deformation, completion, symmetry and dimension that manifest themselves across diverse fields, often in surprisingly different ways. Along with the conquests of specific conjectures, the deepening of our understanding of such general themes is often evoked when mathematicians praise each other's work, for example, in prize citations.

Musicologists distinguish between a tune elaborated by a composer in the course of a single piece of music, and a more general style characteristic of a composer or an epoch. Similarly, there are good reasons to distinguish between, on the one hand, mathematical motifs of limited scope and, on the other, apparently ubiquitous themes, such as symmetry or duality.

I shall offer some examples of the way these themes pop up in diverse contexts and argue that the analogy with music helps philosophers and mathematicians to articulate the various kinds of similarity and repetition that occur within mathematics.

Dr Grace Lees-Maffei, Reader in Design History

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***Abstract: Household Engineering*? Progress, Authority and the Appliance of Science in Twentieth-Century UK and US Domestic Advice Literature**

Expertise and authority are, arguably, pre-requisites for professional advisors. During the fin-de-siècle and early- to mid-twentieth century, what had been known as ‘home arts’ or the ‘domestic arts’ became increasingly professionalised as domestic science and home economics entered school and higher education curricula. Domestic advisors mediated the appliance of science to home arts for their reader/consumers, and, in so doing, they accessed a new well of authority: that of scientific expertise. In domestic advice literature of the 1920s and later, domestic practices could be recommended to readers not on the basis of precedent or protocol, or in the interests of personal qualities ranging from thrift to elegance, but because science had *proved* the best way of doing things. This paper will explore a number of examples of the appliance of scientific knowledge to domestic discourse, including the best known: Christine Frederick’s *Household Engineering: Scientific Management in the Home* (1915) which drew on efforts to improve the efficiency of mass production such as Frederick Winslow Taylor’s ‘Scientific Management’ (aka ‘Taylorism’) and the motion studies of Frank and Lillian Gilbreth. The kitchen, particularly, became – at least theoretically, if not practically – the site of a series of learned steps aimed at reducing effort and aiding efficiency. At the same time, the emotive resonance of the heart of the home - the hearth - and the kitchen’s role as a social hub, was sacrificed in favour of the kitchen as workshop/laboratory. Frederick’s aspirations to efficiency for her readers were not entirely successful if we take later studies, such as Ruth Schwartz Cowan’s *More Work for Mother* (1983) as indicative. Cowan explained how the application of technology to the home, in the form of domestic appliances, increased rather than reduced the twentieth-century domestic burden.

Tony Longson, Professor of Art Cal State, Los Angeles

http://tonylongson.com

Abstract

As a youngster, I was fascinated by the idea of depicting space on a flat surface, and tried (without much success) to paint 3D objects to look flat. In the late 60s I studied Fine Art at Reading University and was introduced to the English Constructionists by my tutor, and one of the leading practitioners, Terry Pope. He also introduced me to the Systems Artists. My first construction "Group Theory Grid" was the result of a class taught by John Ernest. There were many discoveries in this work that have continued to inform my creative activity since. In this presentation I will show examples of my work, and describe the ideas and influences. In particular I will talk about my interest in visual space and visual perception, the 2D/3D ambiguity, order and chaos, granularity and the boundary between marks and the image they compose. I will also discuss the creative visual significance of the programming language, and the generative influence of material and processes.
For the workshop on Saturday I will be using the example the "SciVi" project to make animations of the origins of the cosmos.

Philip Mead, Research Fellow in Music

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Abstract: Correlations of time, space and structure in the art of Turner and Debussy.

In France, at the end of the nineteenth century there was a fusion of arts. Musicians, poets and painters not only knew each other, but also influenced each other. Hence we find terms like ‘impressionism’ used for both music and painting, and ‘symbolist’ for both music and poetry. However, this paper seeks to show that there are correlations of time, space and structure in the art of Turner and Debussy that go far beyond these surface similarities to fundamental aspects of organization and structure. These will be demonstrated both aurally and visually.

Simeon Nelson, Professor of Sculpture and Ways of Knowing convenor

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Introduction to Ways of Knowing

Wolfgang von Goethe was a poet and a scientist who saw his enquiry as needing both the rigour of scientific method and also a deep identification with that which he was studying only expressible through poetry or art. His holistic approach can seem less possible in a ghettoized contemporary culture of experts and ‘knowledge silos’. Paradoxically, it seems to me, the winds of syncretism, of genuine interdisciplinary enquiry are everywhere to be found, though perhaps getting less airtime than acrimonious culture-wars playing out in the public domain. Both artists and scientists can be uneasy in each other’s territory. Non-scientists can get the science wrong as much as non-artists may find contemporary artistic practice a mystery. I feel intuitively that both domains are required in order to construct an adequate picture of reality.
Artists and scientists share the ability to deal with uncertainty, science with falsifiable hypotheses, art with the subjective mystery of intensely felt, embodied knowledge. In bringing artists and scientists together into a fruitful discussion the most important requirement would be to put certainty, unquestioning faith in ones own way of knowing the world to one side and to be radically open to the manifold of knowledges that an event such as this inevitably contains. To paraphrase Karl Popper, “any intellectual system which cannot doubt itself is suspect”.

Alan Peacock, Head of Screen, School of Creative Arts

http://web-apps.herts.ac.uk/uhweb/about-us/profiles/profiles_home.cfm?profile=D9F0FE89-DBFA-8C42-26E56762EDC36B7A

Abstract: Difference Engines – memes, Art, Sciences and cultural identities

This paper proposes that 'Arts' and 'Sciences' are meaningless terms in their imprecision, range and cultural contingency, but notes that ideas of things labelled 'Arts' and 'Sciences' as component and opponent identities are firmly grounded in the cultural logic of our times and other recent histories.

By way of a McLuhanesque excursion examining ways of thinking as media forms (mind, itself, being a media which extends mind), the discussion proceeds to an examination of 'memes' (Dawkins, Blackmore, et al) as a way of approaching an understanding of a set of cultural phenomena including 'Arts' and 'Sciences' (drawing on Stephen Wilson), 'superstitions', 'indigenous theories' (Schiffer), 'magic', 'technology' and other ways of understanding the world. Drawing on a biological evolution gene pool analogy the diversity of Arts and Sciences memeplexes is seen as a relatively 'healthy' state in that it offers resilience in face of change, that difference is an engine of cultural continuity.

The paper argues that 'Arts' and 'Sciences' (like religion) are memeplexes that mutually modify with their environments in a quasi-Darwinian dance that is 'foregrounded' more in times of rapid cultural change. In this context any concern about the inter-relation of the 'Sciences' and the 'Arts' (such as this conference) is a display of cultural anxiety about hybridisation and the recombination of the traits and tropes of difference into less distinct entities. A hybridisation that fascinates, and is both wanted and rejected simultaneously as it sits between the binary entities of structured reality.

The paper concludes with an observation on the all-pervasive-ness of the 'Scientific Method' mindset, one of the more 'powerful' memes in contemporary culture. An observation that slowly becomes an associational listing rather than a rational argument, that, itself, undoes the Scientific Method of the academic paper to become the meditative musework of the Arts-mind.

Lyndall Phelps, UH Galleries exhibiting artist

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Abstract: An Unlikely Alliance

The discovery and investigation of historical narratives, together with their contemporary counterparts form the core of my artistic practice. Whilst the subjects I explore are firmly embedded in the scientific: natural history, medicine, botany, flight and war, a strong sense of humanity permeates the work. The fragility and vulnerability inherent in human society and nature underpin my practice; the possibility of escape, rescue or protection is never far from the surface.

Since 2006 I have become increasingly interested in exploring relationships between natural history and the military, two seemingly disparate areas. *An Unlikely Alliance* will investigate this exploration through *The Pigeon Archive* and *Softkill* an exhibition with University of Hertfordshire Galleries in 2011.

The Pigeon Archive documents through photography, video and sculpture ways in which homing pigeons were used during the First and Second World Wars. Procedures that inhibited or denied pigeons their natural behaviour were of particular interest to me; their historic manoeuvres re-staged using re-constructed wartime equipment.

Softkill explores radar technology and its ability to identify a target along with the countermeasures deployed to protect that target. I am currently working with Drs. Clive Alabaster and Evan Hughes from Cranfield University's Defence and Security School, Department of Informatics and Sensors, who have recently developed a low cost radar unit for the Ministry of Defence designed to detect humans. We are in the process of adapting the unit to detect wildlife in order to help natural history scientists search for illusive wildlife, including endangered mammals and birds.

Dr Pat Simpson, Reader in the Social History of Art

http://web-apps.herts.ac.uk/uhweb/about-us/profiles/profiles_home.cfm?profile=D9F0C3D2-C908-6EB1-7FA4F4A30486E99A

Abstract: Visualising Evolution: Science, Art and Visual Culture at the Darwin Museum Moscow

This paper looks at aspects of the relationships between art, taxidermy, bio-politics and the shifting representations of Darwinian evolutionary theory within the history of the Darwin Museum, Moscow 1907-2010.

The museum began in 1907 at the Higher Womens' Courses institute in Moscow, with a collection of stuffed birds belonging to its founder, Dr Aleksandr Kots. Today it is the leading natural history museum in Russia. The new museum explicitly shares with its previous incarnations a commitment to the use of variety of art forms as means to engage the viewer with Darwin's evolutionary theory, and to emphasise the variety and variation in nature. Many of the current exhibits include art works and mounted specimens dating back to the earliest days of the museum's existence. As in the past, the displays are designed by artists in conjunction with curatorial subject experts.

My argument draws attention to the mesh of connections and contrasts with western approaches to Darwinian science and museological representations of evolution. Among the connections, are the use of taxidermy and art to provide an educational spectacle, particularly for the education of women; links with zoopsychology, early genetic science and discourse on eugenics; as well as reference to a 'progress' model of human evolution still common in popular culture. The differences relate to how Darwinism was politically, and scientifically nuanced within shifting historical contexts: as politically radical in the pre-revolutionary era; as the basis for understanding and prompting a new stage of human evolution in the Revolutionary 1920s-30s; and as diametrically opposed to genetic science in the Lysenkoist period 1938 –1960s. I will begin by looking briefly at the role of taxidermy, leading on to consider the Museum's engagement, firstly with issues of micro-evolution, and secondly with macro-evolution, where I will focus particularly on approaches to human evolution.

Marty St James, Professor of Fine Art

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Abstract: The pixilated moment – imbued; a conceptual approach to Art and Technology

via
pa·ta·phys·ics *n. (used with a sing. verb)*
The French absurdist concept of a philosophy or science dedicated to studying what lies beyond the realm of metaphysics, intended as a parody of the methods and theories of modern science and often expressed in nonsensical language

I have been practicing Pataphysics for many years and have presented in-depth lectures in various parts of the world at conferences and gallery discussions. Below is an example of some of the text from my talk in Buenos Aires recently.
The predominant abstract is its abstract, from which the re-engineered language takes when focused within an audience arena. Exchanges takes place at a number of levels and breakdown often occurs as part of the non-metaphysical process. Audience participation is encouraged but only at the level of respectful understanding of the commands, signs, duplication and precise organizational elements involved and that it is understood that exchange has to be reciprocal at an intellectual and artistic level.

Text: *Bur ba laper do la do la do la babble lap*
Bur ba laper do la do la do la babble lap
Bur ba laper do la do la do la babble lap

The continuing erosion of lines between elements in particular Art, Science and Technology and connections between
Key words: technology, science, art, performance art, action, engineers, artists, pixel, imbuement, solis, pataphysics, absurd, knowledge, beyond reason, Antarctica
It is expected that a short film will be projected along with this paper: *Upside down world*
Key authors: Shelley, Jarry, Beuys, St.James, Brunel

The absurd as science, as art and as real-time experience in a world of logic, political correctness and commercial unrealism.
The necessity of absurdity – as a means to locate new ideas, thoughts and contributions. To gain greater understandings of such theories as: String Theory: Including the idea that there are seven spatial dimensions that are “hiding” in the three we’re familiar with.

Dr Rebecca Thomas, programme leader of Photography

Abstract: What has gravity to do with Feminism?

Andrea Duncan was a visual artist and academic whose projects, such as her contributions to the *Spectacular Bodies* exhibition at the Hayward Gallery, the art and science magazine *Leonardo*, and to the volume *Strange and Charmed: Science and the Contemporary Arts* (ed. Sian Ede), explored the relationship between art and science. This paper focuses on her late works, such as the *Humanscape* project at Kings College Hospital (in which the author, at the time a doctoral student under Duncan’s supervision, collaborated) and in particular on an exhibition titled “Milvea and the Curved Field”. That exhibition, which was not widely reviewed at the time, was concerned with Einstein’s ‘theory of relativity’ and the concept of curved space. Duncan revisited Luce Irigaray’s famous question, “is E=mc2 a sexed equation?”, putting Einstein’s wife into the frame in a photographic exhibition.

Nicola Trisott, Director of Arts Catalyst, London

www.artscatalyst.org

Abstract: The Performance of Science in the Contemporary Arts

Artists who test the edges of what is possible, permissible, and sometimes even legal, raise interesting questions about how the world is organized and understood. My paper will discuss the practices of some of those artists who engage directly and critically with the processes of science, exposing the performativity of science and rebalancing our understanding of science away from an obsession with pure knowledge and towards recognising science's material

powers and its technological and social contexts. From Gustav Metzger, who has constantly challenged the notion of progress itself and what he terms the auto-destructiveness of our modern technological society through symbolic actions and activism, to Eduardo Kac, whose transgenic rabbit-as-art-project Alba was achieved in a laboratory, I will examine tactics used by some of these artists and discuss these with reference to the political nature of technological systems, and recent discourses around science and democracy.

Alice Williamson, doctoral student in astrophysics and music

Alice will be presenting a version of a paper by her late supervisor, astrophysicist Robert Priddey who died suddenly last year and to whose memory this symposium is dedicated

Abstract: Occult Arithmetic: Music, Mathematics & Mysticism

The ancient Pythagorean sect bequeathed an abstract concept of music – later known as *musica universalis* – music as pattern, flow, a direct embodiment of the fundamental processes and forms underlying reality. Through the centuries, this beguiling notion re-emerges, amplified, elaborated and reinterpreted in the work of the most prominent philosophers and physicists. To what extent could it still be said to hold? and in what way can it stand as an archetype for the interaction between art and science?