

'Introducing Neuroarthistory: How to combine paintings and neurons'

Dr Kajsa Berg

Sainsbury Centre for Visual Arts, University of East Anglia, Norwich, NR4 7TJ, UK.

k.berg@uea.ac.uk

Neuroarthistory uses neuroscientific studies in the practice of art history. John Onians, David Freedberg, Barbara Stafford and Eric Kandel have all contributed to this field by arguing that we need to understand the biological components of vision to investigate the culturally specific aspects of art. In this aspect neuroarthistory differs from neuroaesthetics which focuses on universal responses to art and this focus on the contextual aspects of art may seem at odds with neuroscientific perspectives. However, a growing understanding of how the brain is shaped by experience and learning through neural plasticity may offer the opportunity for art historians to understand even culturally specific features of art. While traditional art historians may be happy to focus on vision as culturally constructed, the scholars above may prefer the notion of a 'contextual brain'. This talk will outline the predominant projects in and trace the history of neuroarthistory. This will uncover some of the recurring issues, debates and problems that underlie any attempt at bringing the sciences and the humanities together for joint research.

Kajsa Berg obtained her BA, MA in Art History at the School of World Art and Museology at the University of East Anglia. She completed her thesis 'Caravaggio and a Neuroarthistory of Engagement' and doctorate there in 2010. Now she continues to work for the University of East Anglia in the Sainsbury Centre for Visual Arts. Her current research and publications continue this interest in neuroarthistory, and the emotional engagement with imagery particularly focusing on the 17th century. She has just organized an international summer school in neuroarthistory.

Generation of 1911: A Case Study in Portugal

Maria Burguete

*Rocha Cabral Scientific Research Institute, Lisbon, Portugal
(mariamartins434@gmail.com)*

The generation of 1911, united by a common ideal of university and scientific research, formed a close-knit group with its own identity, in the contextualization of experimental medicine in Portugal, in the trail of a greater “scientificity” of this area of human knowledge.

In the mid-19th century, clinical medicine in Lisbon confined to São José Hospital and Surgical School was performed in deplorable conditions. However, with the appearance of May Figueira (1829-1913) who studied Medicine in Paris and later did his PhD in Brussels, this situation changed completely, once his view upon clinical medicine was supported by the introduction of new apparatus, such as the microscope (instrument magnifying objects by means of lenses so as to reveal details to naked eye), ophthalmoscope (instrument for inspecting retina) and laryngoscope (mirror apparatus for examining larynx).

This new approach to clinical medicine based on experimental methodology leading to a more “scientific” approach of medical studies, was not well received by the great majority of their colleagues. This situation was natural considering that only 20% of the Portuguese population were literate.

Nevertheless, in a great effort to achieve modernization in order to reach European model of medicine from Germany, France and United Kingdom, a group of medical scientists, with no political affiliations characterized by their idealism on cultural and scientific accuracy, was capable of implement this scientific methodology launching the medical studies through an European dimension, comparable to what was seen in Germany, France and UK in the same period.

In this national context, the year of 1911 became a symbolic date for medicine in Portugal.

1. **Burguete, Maria (2013)** – “*Medical Studies in Coimbra 1911*” - chapter from the book “All about Science: Philosophy, History, Sociology & Communication”. Published by WSP (ISBN 978-981-4472-92 -0). 420 pages.
2. **Burguete, M. C., Martins, D. R., Fiolhais, C. (2013)** - “*Evolução dos Estudos Médicos Em Coimbra no Século XIX – Contribuição das Ciências Físicas e Químicas*” – a chapter from the book published by Imprensa da Universidade de Coimbra (in publication). 230 pages.

Maria Burguete received her Ph.D. in History of Science (contemporary chemistry) from Ludwig Maximilians University at Munich, Germany (2000). She graduated from the Faculty of Sciences in Lisbon (1982), after completing a Bachelor Degree in Chemical Engineering (1979). She is a scientist with and research experience in a wide variety of scientific fields. This diversity enhanced the development of both her interdisciplinarity and a transdisciplinarity. She is now a scientist at Bento da Rocha Cabral in Portugal. She has published seven scientific books and seven poetry books, and over 25 scientific papers mostly in history and philosophy of science. Since 2010 she is a fellow of the European Academy of Sciences , Arts & Letters, founded in Paris in 1980.

Science, Culture and Anti-science

Jean-Patrick Connerade

Imperial College London and European Academy of Sciences, Arts and Letters
(jean-patrick@connerade.com)

Science today has sometimes a strange reputation of not really forming part of what ordinary European citizens call ‘culture’. This peculiar view, while it is, of course, totally unjustified, nonetheless conveys a real difficulty. Scientists, over the past fifty years or so, have (it should be admitted) completely bungled their public image. As a consequence, they find themselves out on a limb, and there is now a serious need to reconstruct the relationship between science and other forms of higher civilisation. This could be at the root of the whole ‘anti-science’ issue.

Recently, it has been recognized that the problem exists. Indeed, CP Snow had brought up a related issue long ago, but researchers took little notice at the time, as he tended to blame artists and writers for their ignorance of science. Since then, the response has been at best clumsy, and demonstrates that, indeed, the relationship to other branches of culture has become somewhat distended.

Basically, researchers have reacted to public hostility by arguing that science is relevant to the European citizen in terms of *value added*, where ‘value’ is the financial return on investment which should, in future, fund our expensive social welfare system in the ‘knowledge society’. This is not really what the European citizen wants to hear, and he can probably guess it is a bit of a pipe dream. The proverbial *man in the Clapham omnibus* is fully aware of the difficulties of the modern world. He knows about competitiveness and all questions surrounding the great economic shift towards the Pacific rim. Economics, quite rightly, is not what colours his judgement about culture.

What he really wonders is where modern science stands with respect to more fundamental values. Is it inside or outside our heritage and, if inside, how does it relate to our cultural identity? Until the question is answered clearly, the European citizen will continue to harbour doubts.

The present talk addresses this issue by discussing the relationship between Science and Poetry, and how misunderstandings between them, born in the Romantic period, gave birth to the ecological movement. Harmony between the two, it is argued, will prove essential for the future of European science.

1. **Connerade, J. P.** and McGovern, I. (Eds.) “Science meets Poetry 3” (220 pages) Published by Euroscience, Strasbourg, France 2013 ISBN 978-1481951005
2. **Connerade, J. P.** “Highly Excited Atoms” (501 pages) Published by Cambridge University Press, Cambridge, UK 1998 ISBN 978-0521432320 paperback 2005 ISBN 978-0521017886

Jean- Patrick Connerade Educated Lycée Charles de Gaulle and Imperial College D Sc University of London 1976. Lockyer Professor of Physics for many years, now Emeritus Professor and Distinguished Research Fellow Imperial College London, Hon Prof Physics East China University Shanghai and Permanent Visiting Prof. WIPM Chinese Academy of Sciences. President of the European Academy of Sciences Arts and Letters, Honorary President of Euroscience. Some 250 published papers. He is also a published poet in the French language, recipient of several literary prizes (prix Jose-Maria de Heredia de l’Académie Française, prix Paul Verlaine de la Maison de Poésie de Paris, Grand Prix de Poésie de la Société des Poètes Français).

A History of the History of gender & science

Anne-Sophie Godfroy

*Maître de Conférences, Université Paris Est Créteil & Sciences Normes Décision, France
(anne-sophie.godfroy@paris-sorbonne.fr)*

This paper will present a short history of the research field "gender & science": the topics it addresses how it contributed to redefine history of science and highlighted new methodologies. The three research topics we propose to identify in a first approach, both chronological and logical, appeared one after another, but the research work is going on and all topics are now developing simultaneously.

1. The first task of historians was to make women visible in history of science. The works of Margaret W. Rossiter (Rossiter, 1982, 1998, 2012) have been a landmark. Beyond the biographic work and the emergence of new portraits of women scientists, the role of technicians, persons without permanent positions, spouses, the correspondence, and other forms of less official and visible activities has been re-evaluated.

2. Making women visible has encouraged a deeper understanding of the impact of gender relations in the making of science. Rossiter's paper about the "Matthew Matilda Effect in Science" (Rossiter, 1993) has been essential to understand why women were invisible. The "standpoint theory" has underlined how the belonging to a dominant or to a marginalized group can affect viewpoints and communication in science, challenging a supposed objectivity. Furthermore, through the notion of "strong objectivity", Sandra Harding (Harding, 1991) has demonstrated how the perspectives of marginalized persons can help to contribute to a more objective science.

3. A new research field emerged in the last years. The aim is "to employ sex and gender analysis as a *resource* to create new knowledge and technology" and to propose "new practical methods of sex and gender analysis for scientists and engineers" and "case studies as concrete illustrations of how sex and gender analysis leads to innovation" ("Gendered Innovations in Science, Health & Medicine, Engineering, and Environment", 2011).

We will illustrate each topic with examples and case studies. Our aim is to provide some orientation in the growing research field of gender & science, we do not pretend to be exhaustive at all.

1. Gendered Innovations in Science, Health & Medicine, Engineering, and Environment. (2011-2013). <http://genderedinnovations.stanford.edu/index.html>
2. Harding, S. (1991). *Whose Science? Whose Knowledge?: Thinking from Women's Lives*. Cornell University Press.
3. Rossiter, M. W. (1982). *Women scientists in America: Struggles and Strategies to 1940*. (1998). *Women scientists in America: Before Affirmative Action 1940-1972*. (2012). *Women scientists in America: Forging a New World Since 1972*. Baltimore: Johns Hopkins University Press.
4. Rossiter, M. W. (1993). The Matthew Matilda Effect in Science. *Social Studies of Science*, 23(2), 325–341.

Anne-Sophie Godfroy obtained her PhD in 2004 at University Paris 4 Sorbonne, after studying Philosophy at the Ecole Normale Supérieure in Paris. She is associate professor at University Paris-Est-Creteil and researcher at the research centre "Sciences Normes Décision" (Paris Sorbonne – CNRS). Her main research interests are methodology for international comparisons, science in society, gender. For ten years, she participates to several European research projects on gender and Science and Technology.

Taste

Françoise Icart

European Academy of Sciences, Arts & Letters, France
(francoise.icart@gmail.com)

Is it possible to talk of good taste in art today?

I shall explain what is it that we call “taste” then I shall examine what are the main principles that are in play when we have a judgment of taste. What is moved in some one by art that drew the judgment of taste? Emotion is the first thing that moves us: in front of an art work if we feel nothing, we don’t think it is a good work. Pleasure is the second thing that moves us. We are able to fight for an artist that we judge is great.

Judgment of taste has a basis that is knowledge, when you know more you can judge art better. So the work of art that is very close to our observation and knowledge is the one we think true, the one we judge the best. Very often today we make a mistake between beauty and the sublime; we call beautiful things which are just tremendous. But sublime is not a criterion for judgment.

Truth cannot be a criterion either, as there are beautiful paintings of great artists that are not giving us the true drawing of a human being. So taste is not only a question of knowledge.

People are not any more confident in their own taste and listen to critics and experts, but those very often don’t judge beauty but only the spectacular or the money value. So I can say that good taste is something which is part of culture, part sensibility and part good technique amongst all the pleasure

As the French artist Nicolas Poussin says “le but de l’art c’est la delectation” (“the aim of art is the pleasure”).

Françoise Icart is president of artist group ARTEC
She organizes many exhibitions in France, Europe and the world.
She has every month a 1 hour and a half chronicle on the radio “the art free chronicle”
She is a member of European Academy

Science Matters: Its Philosophy and History

Lui Lam

Department of Physics and Astronomy, San Jose State University, San Jose, CA 95192-0106, USA; Institute of Physics, Chinese Academy of Sciences; and China Research Institute for Science Popularization, China Association for Science and Technology, Beijing, China (lui2002lam@yahoo.com)

Science Matters (scimat or SciMat) is the new discipline that treats all human dependent matters as part of science. It thus includes all the topics in the humanities and social sciences. Scimat results from two recognitions: (1) Humans are a material system (made up of atoms); (2) Science is the study of Nature which includes all material systems. The first recognition follows from Darwin's evolution theory (1859) and Einstein's work on Brownian motion (1905).

The tradition of treating everything in the universe, human and non-human systems, from a unified perspective—starting with Aristotle and continued until the Renaissance—was broken with the rise of modern science in the last 400 years. Efforts to revive this tradition happened from time to time and failed with one exception: the Enlightenment (1688-1789 by one account). The Enlightenment succeeds in uttering in social science (by establishing Economics through the effort of Adam Smith) but fails in turning the humanities into a science. It is an effort interrupted.

Here the historical movements to revive Aristotle's tradition—the pre-history of scimat—will be reviewed and the reasons for their failure analyzed. The short history of scimat will be included, too.

Lui Lam, humanist and physicist, obtained his BS (First Class Honors) from University of Hong Kong; MS., University of British Columbia; PhD, Columbia University. He did his PhD thesis at Bell Labs. Lam invented Bowlic liquid crystals (1982), Active Walks (1992), and two new disciplines: Histophysics (2002) and Science Matters (2008). He has published 13 books and over 170 scientific papers; the books include *Arts: A Science Matter* (2011) and *All About Science* (2014). He is the founder of the International Liquid Crystal Society (1990); cofounder of the Chinese Liquid Crystal Society (1980); founder and editor of two book series, "Science Matters" (World Scientific) and "Partially Ordered Systems" (Springer). Lam is an editor of *Physics* and *Science Popularization*. His current research is in Science Matters (SciMat) and Complex Systems; SciMat website: www.sjsu.edu/people/lui.lam/scimat. Email: lui2002lam@yahoo.com.

Art and Biology a Story about Art Research

Marta de Menezes (*) & Maria Burguete (**)

(**) Rocha Cabral Institute, Lisbon, Portugal mariamartins434@gmail.com; (*)
Ectopia Experimental Art Laboratory. marta@martademenezes.com

Sciences have evolved exponentially since 1980 giving rise to the incredible possibility of completing the Human-Genoma Project (HGP) in 2003 allied with the increasing knowledge of the molecular structure of the world we live in. The Human Genome Project (HGP) refers to the international 13-year effort, formally begun in October 1990 and completed in 2003. What made this effort possible was computer simulation which allowed us to simulate several pictures before choosing “the right one”. However, interests in the research fields of knowledge such as, Chemistry, Biochemistry, Physics and Biology, have decreased since then. Why? We are now living in a changing world where the paradigm – Science through Laboratory Experiments – has been replaced by a new one: Science through Computational Simulation. Therefore, three-dimensional images where we can see a simulation of an experiment, becomes more important than laboratorial experiments which are time consuming, more expensive and more difficult to perform. In a short sentence: Imagination replaced hard-work! Let us take advantage of that situation and study several scientific concepts or ideas through the observation of works of art from a Systemic Approach.

Looking through Marta de Menezes works of art one can realize that her work explores the possibilities modern biology offers to artists. Therefore, developing the use of biology and biotechnology as new art media, allowed her not only to portray the recent advances of biological sciences but also to incorporate biological material as a way to convey an artistic discourse developing an opportunity to explore novel ways of representation and communication. Manipulation of scientific information through super computers and similar devices has performed so well that we have trouble dealing with all the novelty related with our own field of knowledge. Consequently, young scientists moved in other directions: always looking for something less difficult. Just like the Principle of Occam.

1. **Marta de Menezes**, look online at: martademenezes.com for further information on my work.
2. **M. Burguete** “*ChemArt and BioArt: Art-Science Interactions*” chapter 12 from the book – Arts – A Science Matter, 247-265, WSP (ISBN 978-981-4324-93-9) (2011).

Marta de Menezes with a degree in Fine Arts by the University in Lisbon, a MSt in History of Art and Visual Culture by the University of Oxford, and a PhD candidate at the University of Leiden. She has been exploring the intersection between Art and Biology, working in research laboratories demonstrating that new biological technologies can be used as new art medium. In 1999 de Menezes created her first biological artwork (*Nature?*) by modifying the wing patterns of live butterflies Her work has been presented internationally in exhibitions, articles and lectures. She is currently the artistic director of Ectopia an experimental art laboratory in Lisbon, and Director of Cultivamos Cultura in the South of Portugal. Email: marta@martademenezes.com

Maria Burguete received her Ph.D. in History of Science (contemporary chemistry & biochemistry) from Ludwig Maximilians University at Munich, Germany (2000). She is a scientist with and research experience in a wide variety of scientific fields. This diversity enhanced the development of both her interdisciplinary and a transdisciplinarity. She is now a scientist at Bento da Rocha Cabral in Portugal. Email: mariamartins434@gmail.com.

Biology and Art Complicity

Alexandra Nobre

Department of Biology, CBMA – Centre of Molecular and Environmental Biology, Escola de Ciências da Universidade do Minho, Campus de Gualtar 4710-057 BRAGA Portugal
(anobre@bio.uminho.pt)

Science and art are the two main forms of intellectual production. As stated by Einstein “The most beautiful thing we can experience is the mysterious. It is the source of all true art and science.” Art takes science to people. Since long ago, both scientists and artists have been inspired by science from different angles. In fact, patterns, energy conversions, symmetries, living things organization, all are inspirational and sense/curiosity awakers to the human mind. Actually, I strongly believe that entwining both is one good strategy of deeply involving the public, no matter its characteristics, in the spreading of a message, an idea or a topic. This conviction has been guiding me for several years, whether it concerns the conception of projects and events, or to the practical approach and application of ideas. In this talk I will briefly describe several projects and actions where I have been involved during the last seven years, all of them sharing the same underlying idea, making science more familiar to the general public.

1. Alexandra Nobre, “Perceptions – Science and Scientists to the eyes of the Society,” catalog (<http://www.yumpu.com/pt/document/view/13048602/roteiro-a-ciencia-e-os-cientistas-aos-olhos-da-sociedade>)
2. Almeida MJ, Nobre A, Maciel M, Forjaz A, Aguiar CA, (2012) "Stitch by stitch the science fills the space," *Procedia Social and Behavioral Sciences* 55, 935-944

Alexandra Nobre obtained her degree in Biology from the Science University of Lisbon, M.Sc. in Biochemical Engineering from the Instituto Superior Técnico, Lisbon and Ph.D. in Science from Minho University. Between her degree and her master degree, she also worked for a couple of years in a governmental laboratory related to the industry. She teaches for 14 years in the Department of Biology-University of Minho. (mainly subjects related to Applied Microbiology and Microbial Physiology). However, perhaps due to her greater willingness to communicate science “beyond the walls of the university”, for a general and diverse public, has been devoting most of her time and energy to outreach activities outside the university. Most of the actions take place in museums, science centers, libraries, cultural venues, shopping centers and involve either performing or figurative arts.

A proton walks into a bar: humour and science communication

Hauke Riesch

Department of Sociology and Communications, Brunel University, London (hauke.riesch@brunel.ac.uk)

Comedy as an approach to communicating science and enhancing “public engagement” is an industry that has grown phenomenally over the past decade, mainly in the UK where the comedy industry has for a while now become increasingly culturally dominant, but also in other countries. Humour and science can converge from either side; some prominent (and not so prominent) science communicators and journalists have started using stand-up routines and similar vehicles as part of their communication activities (such as Ben Goldacre in the UK), while some primarily comedy oriented outlets (such as the internationally successful sitcom *the Big Bang Theory*) are being retrospectively seen as vehicles for science communication; similarly some already established comedians such as Dara O'Briain have also started using their own science background to develop comedy routines and game shows. The rise of science-based comedy can be seen as part of a wider cultural phenomenon where “geekiness” is seen as increasingly cool, and therefore associated with the similarly cool activities of comedy.

In either incarnation of science-based comedy, assumptions are being made by science educators about the intrinsic goodness of bringing science to the public through laughter. This paper will attempt a more critical perspective to challenge and examine some of these underlying assumptions. While not addressing the often unevidenced issue of whether comedy really does help in educating the public about science (though this would itself be a much needed study), I will instead take a sociological look at the social functions and consequences of science based comedy, drawing on critical comedy studies [1,2]: Comedy can be a unifying experience that shapes wider identities through the humorous presentations of shared stereotypes, but it can equally become a divisive act which delineates insiders from outsiders; i.e. those who laugh at jokes about protons and those who don't get them. In these types of jokes, familiarity with science is already assumed and in fact might be – from a science educational perspective – be rather counter-productive, those who get the joke don't need the education, while those who don't will end up being alienated from the subject and might give up on it.

Similarly, the superficially unflattering presentation of the stereotypical geek in sitcoms such as the *Big Bang Theory* or the *IT Crowd* can enhance ingroup cohesion through propagating a “geek-chic” that lets people who recognise themselves in these portrayals feel part of a larger “geek” community, but it simultaneously defines who is on the outside and who isn't part of the geek ingroup; therefore group feelgood within the geek community is enhanced, but only for those who are already part of it (and therefore arguably don't need to be reached from a science communication perspective). Ultimately, I will argue that the point of good science communication (next to the education bit) is to break down barriers between science and the public(s), and that therefore comedy as an often divisive practice that thrives on categorisations, stereotyping and often ritual humiliation of outsiders as well as insiders can, no matter how well intentioned, often end up working in the opposite direction.

1. Billig, M. (2005). *Laughter and ridicule: Towards a social critique of humour*. London: Sage
2. Lockyer, S and Pickering, M. (eds) (2005). *Beyond a joke: The limits of humour*. New York: Palgrave.

Hauke Riesch is a lecturer at the department of Sociology and Communications at Brunel University, London. He has written a PhD on popular science and scientists' representations of philosophical topics, and has since worked on risk theory, the public understanding of risk and environmental issues and science blogging networks.

Indigenous Knowledge Systems and Science

Gwendolyn Smith & Elena Bastidas

*Attune Institution, Titaniumstraat 10, Paramaribo, Suriname (gwen@attuneteam.org);
Nova Southeastern University, School of Humanities and Social Sciences, Department of
Conflict Analysis and Resolution/ 3301 College Avenue, Fort Lauderdale-Davie, Florida
33314-7796, USA (bastidas@nova.edu);*

Indigenous knowledge systems are rooted in an equal and harmonious relationship with nature. These systems consist of not only factual knowledge but also values and beliefs generated over many years of living in nature. In contrast to abstract science, with a tendency to influence and control nature, indigenous systems intrinsically connect natural science with human behavior. This research studied the Trio indigenous peoples living in the Amazonian rainforest in Suriname for approximately 5000 years for understanding their learning system and the diversity of connections they make between nature and humanity. With quantitative and qualitative data analysis, we researched the Trio view on local climate change, including their factual knowledge, cultural values and beliefs and their attitude towards climate change. We demonstrate that the values and beliefs held by Trio indigenous peoples are more important drivers for decision-making than factual knowledge¹. The research calls for a bottom-up approach to research complex knowledge systems and concludes that conflict resolution frameworks are useful analysis tools in bridging humanities and nature.

The first step towards achieving a true dialog between researchers and local people is recognizing that for external researchers, trained under the scientific method, understanding the dynamics of indigenous communities can be challenging. Finding the right learning tools to open up communication becomes critical, especially in situations where the researcher's agenda is tinted by political interests like in the case of the climate change discourse. This study recommends using dialogic and learning tools like *Social Cartography*² which can be used to learn about the complex and dynamic realities of indigenous peoples. *Social Cartography* has been used as conceptual and methodological proposal to explore, to feel, and to understand the complex and dynamic framework of relations and knowledge that form indigenous peoples territories. This tool allows researchers to generate processes of reflection and production of knowledge from an exercise of virtual reconstruction of the reality, understood as a network of multiple relations.

1. Smith, G. 2013. Participation of the Trio Indigenous Community in Climate Change Mitigation Projects: A Worldview Conflict Analysis. Doctoral Dissertation. Department of Conflict Analysis and Resolution, Nova Southeastern University.
2. Bastidas, E. P. and C. A. Gonzales. 2008. Social Cartography as a Tool for Conflict Analysis and Resolution: The Experience of the Afro-Colombian Communities of Robles. *Peace and Conflict Studies*, Vol. 15, No. 2.

Gwendolyn Smith has a B.Sc in Agricultural Production from the University of Suriname, M.Sc. in Biotechnology from the University of Texas and Ph.D. in Conflict Analysis and Resolution from Nova Southeastern University. Gwen is specifically interested in analyzing the conflict between western and traditional views in development projects, and facilitated several of such processes. Current projects include developing a system for stakeholders engagement for natural resources and land tenure projects in Suriname. Gwen is collaborating with the Pan-Amazonian networks for sustainable development (ARA) and environmental cartography (RAISG).

Elena Bastidas has both a Ph.D. and an M.S. in Food & Resource Economics, and an M.S. in Agricultural Education & Communication from the University of Florida. Elena works in the areas of Conflict and International Development, Environmental Conflict, and Gender and Conflict Analysis for Development. Current projects include developing a Conflict Resolution capacity building strategy for Indigenous and Maroons groups in Suriname. In Colombia she is collaborating with a network of organizations in community-based conservation efforts of Afro-Colombian communities. In Paraguay she is working in the area of Women Leadership in Agriculture.

From Science to Fiction

Nigel Sanitt

*The Pantaneto Forum, First Floor, 3 Gordon Street, Luton, Bedfordshire, LU1 1QP, UK.
(nigel@pantaneto.co.uk)*

A small number of scientists occasionally cross the divide and write novels (especially science fiction). A greater number, I believe, dally with the idea of writing fiction, but for various reasons never quite make it as novelists.

How different is fiction writing from science? How does an author find a publisher? Where does one start? This article discusses these questions and more, and aims to encourage scientists to take the plunge.

The present author is a scientist who has made the leap. His debut novel *Perfect Nightmare* has just been published by Thames River Press, under the nom de plume Norman Stanton.

Nigel Sanitt obtained his B.Sc. from Imperial College, London and Part III of the Mathematics Tripos and Ph. D. from Wolfson College, Cambridge University, where he trained as an astrophysicist at the Institute of Astronomy. He is founder and editor of *The Pantaneto Forum*, a journal which aims to promote debate on how scientists communicate, with particular emphasis on how such communication and research skills can be improved through a better philosophical understanding of science. His book *Science as a Questioning Process* was published in 1996 by Taylor & Francis, IOP Publishing. His debut novel *Perfect Nightmare* has just been published by Thames River Press, under the nom de plume Norman Stanton.

Insights into Solid State Physics: Basic Phenomena and Teaching

David Schmool

Université de Perpignan Via Domitia, Perpignan, France
and
Department of Physics and Astronomy, Faculty of Sciences, University of Porto, Portugal
dschmool@fc.up.pt

Solid State Physics is a broad area of study, which, as the name suggests, refers to the fundamental physical properties of material solids. The large number of physical phenomena found in solids depends in general on the types of atoms present and their spatial distribution. The range of physical phenomena includes, crystallography, defects in solids, electronic, optical and magnetic properties of solids and also many subjects related to Nanotechnologies.

In this presentation I will give some examples of the relation between the internal structure of solids and physical properties of materials. I will also briefly address some approaches regarding the teaching of solid state physics to undergraduate students and demonstrate some basic models used to assist the understanding of the physical phenomena in solid state materials. I will also share some of my experiences of teaching and writing a book on the subject.

David Schmool gained a B.Sc. (Hons.) degree in Physics at the University of Portsmouth, UK and D. Phil at the Department of Physics, University of York, UK. After completing doctoral studies he held research posts at the University of Liverpool, UK; Istituto MASPEC CNR, Parma, Italy; University of the Basque Country, Spain; University of Versailles, France and the University of Exeter, UK. He has been visiting scientist at the following institutes: Simon Fraser University, Canada; the University of Glasgow, UK; the University of Perpignan, France and the University of Duisburg-Essen, Germany. David has recently written a book on *Solid State Physics* and is the author and co-author of 6 book chapters and over 50 research papers.

Until recently he was lecturer in Physics at the Department of Physics and Astronomy at the University of Porto, Portugal. He is group leader for the *Ultrafast Laser and Magnetodynamic Spectroscopies* unit of the Institute of Physics of Materials of the University of Porto – Institute of Nanotechnologies (IFIMUP – IN) and also Vice-President of the Institute. He has recently been appointed Professor of Physics at the University of Perpignan, France. His principal research interests include magnetism and magnetic materials, nanotechnology, nanomagnetism, spin dynamics in nanosystems, ultrafast processes in magnetism and solid state materials.

Architecture and Shape

Rita de Vasconcellos

Architect & Designer/Lisbon, Portugal (rvasconcellos@netcabo.pt)

Architecture is a science that deals with space: it is partially full and partially empty. A combination among several factors or ingredients, such as: shape, function, aesthetic and proportion.

Therefore, architecture is ruled by principles of order, proportion and shape, within defined parameters of geometric composition according to a defined scale flexibility.

Curiously, we can reasonably look at the art of cooking, for example: performing a cake, as some kind of “architecture“ in as much as some ingredients like: proportions, shape and aesthetic are also primordial to achieve a good result: a beautiful and tasty cake! Just like a reliable architectural “maquette” is achieved by a correct relationship among the same factors: shape, aesthetic and proportion.

To live in an architectural space requires the combined knowledge of its materials and textures so we can change that place into a “visible” or “invisible” space. This balance of shapes or harmony can be established with more or less accuracy the same way we weight plain flour while performing a cake.

After all, whenever we look at something beautiful we feel delighted, as if we were having a beautiful banquet!

1. Vasconcellos, Rita (2011), “Walter-Ego – Conversas com Ele.” Edited by Estrela Polar, Lisbon, Portugal.

Rita de Vasconcellos is an Architect graduated by College of Architecture, University of Lisbon and Designer graduated by IADE, College of Arts in Lisbon. Besides these activities, music as an artistic and creative activity has always been present in her life. Starting her professional life as a designer and graphical artist she evolved into Architecture by restoring some beautiful historical heritage. Recently she has published her first DVD together with some well known Portuguese artists from the world of music. Walter-Ego, the first book she published in 2011, is a very good example of an interdisciplinary spirit of a genuine originality.

Heuristic Potential of Amplifier Simulacrum

Gregory Vastatzidis

European Academy of Sciences, Arts and Letters (Gregory.vastatzidis@)

The principles of the operation of an optimum audio amplifier are implemented to establish the highest possible mental quality. The implementation of the 'Amplifier Simulacrum' has resulted in the development of a Grand Unified Psychological Theory called Precisionism which both synthesizes and does not depend on the existent theoretical systems. The 'Amplifier Simulacrum' allows for interdisciplinary survey with the center being the relationship brain/environment in general.

The amplifier is a fundamental part of an audio system, which consists of the source, being either vinyl disc, CD, DVD, SACD, etc, and of the speakers, with the amplifier to accept the signal from the source, and to send it to the speaker which transduces the electrical signal into acoustical waves. Thus, it is said in the high-end audio field, that the amplifier, upon acceptance of the incoming signal from the source should process it in an impeccable manner, and send it to the loudspeakers without having distorted it in any possible way; the loudspeaker constitutes a “load” for the amplifier which also presses the latter in terms of preservation of optimal stability and a lack of distortion.

1. Gregory Vastatzidis (2007) “*The Heuristic Nature of the Amplifier Simulacrum*”. Published by London Diplomatic Academy (London) (ISBN: 978-84-934593-3-8).

Gregory Vastatzidis BSc, MSc and DSc in Psychology. In 1997, when I was completing my Master’s degree, I had developed a special interest in constructivist theories. I conceived the idea to expound a standpoint which could elaborate on a brain quality which by definition excludes psychopathology.

Remembering and Forgetting – a visual arts research practice in scientific laboratories

Maria Manuela Lopes

University for the Creative Arts – Farnham, UK; Ectopia – Experimental Research laboratory, Portugal (maria@manuelalopes.com / www.maria.manuela.lopes.com)

Artistic residencies in scientific laboratories are becoming common practices in the UK but are still fairly recent and innovative in Portugal. I take my experience in the artistic residencies in scientific domains and my arts-based PhD research in a neuroscience laboratory as a starting point to consider artistic encounters with distinct fields of biological and health research and practice. Approaches to knowledge validation in relation to both domains are also sketched. I explore my practice-based projects developed progressively through a body of interrelated installation artworks intertwined with the themes of memory. The personal practice focuses on specific areas of critical investigation, and on a continuous exercise seeking a reflective research hypothesis and an emerging methodology. The residencies at different laboratories were sustained under research methods familiar to my practice and an ethnographic approach has been used, with studio work mirroring an evolving embedded research process from fieldwork. The example PhD¹ constructs connections between visual art practice and neuroscientific research studies in the field of Alzheimer's disease (AD). The aim was to explore the representational strategies of AD studies in the laboratory through art practice, alluding to the (dys)functioning of autobiographical memory. Debates on visibility and 'looking at', the institutional gaze and the technology within which the visual and science are rooted are examined using Foucault's concepts of *heterotopia* and *panopticon* and Latour's *actor-network theory*.²

In creative terms, this exploration allowed the development of several novel and unique methods of research, the resulting artefacts, and the practical materialization of these via the agency of installation. This is suggested as a fertile area for new art-based exploration and critiques of developments in both contemporary art and science. This presentation and article suggests that while exploring a space for art practice within the discourse of memory embedded in scientific laboratories and medical practices dealing with the network of people involved, I have gained a space within the discourse on arts and health.

¹ Lopes, Maria Manuela, *Representational Strategies On Alzheimer's Studies: A Practice-Based Art Research In A Neuroscience Laboratory*, [PhD dissertation, unpublished], University for the Creative Arts – Farnham, UK, (2013).

² Lopes, Maria Manuela, *Re-enacting the Self in the Archive: Memory, Art, and Neuroscience*. At *Isea – International Symposium on Electronic Art*, Istanbul, 16 September (2011).

Maria Manuela Lopes is a visual artist and researcher who works in Portugal and the United Kingdom. Her current work is interdisciplinary and scientifically informed, researching the relationship between memory and self-identity and presented to the public through multimedia installations which occasionally include biological materials. Her work has been exhibited nationally and internationally and the artist has been teaching in Portugal since 1998. She studied sculpture at FBAUP – Oporto and holds an MA from Goldsmiths College in London. She gained a practice-based PhD at UCA – Farnham, UK (under the supervision of Kathleen Rogers, João Lobo Antunes, and Judith Williamson) in the area of *New Media-Fine Arts*. She co-directs two artistic residency programs in Portugal *Ectopia* and *Cultivamos Cultura*. She has presented her projects at conferences as well as having been published both nationally and internationally.

Combining permanence and change in higher education: the strength of strong values

Filipa M. Ribeiro

PhD Fellow at the Faculty of Psychology and Educational Sciences of University of Porto and visiting researcher at EgoLab at the Department of Social and Cultural Anthropology at the Autonomous University of Barcelona (filipa.ribeiro@gmail.com).

What do Mark Edmundson, English Professor at the University of Virginia (USA) and Daniel Pennac, a French teacher and writer, have in common? In different ways they address what is at stake in any educational system or level: individual and, then, structural transformation. Currently, universities are lost in the translation of labels such as “elite universities”, “corporate universities”, “entrepreneurial universities”, “academic capitalism”. Nevertheless, teaching and learning are still the backbone of any endeavor to resist the confluence of forces in higher education that are leading to greater conformity and consumerism at the expense of inquiry, inspiration and challenge. As any transformation process, teaching and learning must have a permanent ground basis to guide curriculum and personal development within a community. This paper proposes that this common ground should be based on a theoretical orientation drawn upon the idea of sustainability and preparation of the future, with a significant emphasis on the human rights, on the ethics of the Earth, on development and culture. Thus, this paper aims at: 1) presenting and explaining each one of these values; 2) justifying these values with empirical evidence from 30 knowledge networks from scholars based in Catalonia. The purpose is to show how strong teaching and learning in any field must share some permanent and transdisciplinary values in order to universities become places of a true ubiquitous education where everything that is taught and learnt cracks the shell of convention.

Ribeiro, Filipa M. (2013). *Magister Ludi: egonetworks and diversity of knowledges in higher education. Policy and Management of Science and Technology in ibero-american spaces*.(in publication)

Filipa M. Ribeiro, researcher, science journalist and humanist. Graduated in Journalism and Communication; MS. in Science Communication and Sociology of Science, University of Aveiro. She also holds several specialization courses in Genetics, Law, medical journalism and social networks. She wrote science books. In the industry, she has a diverse background in science journalism, digital media, innovation and project management. Currently, her research involves topics on ubiquitous knowledge, sociology of science, social networks and diversity in higher education.

Of the importance of education in the development of creative intelligence and emergence of the genius

Marièva Sol

Certificate of Pedagogic Capacity; Bachelor's degree of Plastic Arts and studies of Master's degree at Pantheon-Sorbonne University. Assistant of Mrs Minne, School Inspector, for pedagogical research, delegate at the "Nursery School Congress at Dijon" writer of a report kept at the library of "Rectorat de Paris". Teacher in Nursery school for 25 years. Author of an "Essay on pedagogy at the nursery school"; Lecturer.

Education of children and training of future citizens are of major and essential stakes for the future of humanity.

After twenty five years spent in teaching in nursery school where I acquired an important experience, I am worried about its future because I notice in the course of reforms that numerous and serious mistakes are committed which are very prejudicial for the children. This is the reason why I wish to contribute and pass on my skills.

Pedagogy is a science which takes into account our knowledge of human development, psychology and sociology. Its purpose is to develop all the intellectual and artistic abilities of the child and at the same time to favour an emotional equilibrium.

Teaching requires at the same time thorough knowledge, skills and imagination. Nursery school allows our children to build up for themselves a harmonious personality because their heart and spirit are new and ask only to be favourably sowed. So, the teacher has to create a living space where the child will be happy to come and to propose at the same time playful and training activities which will fascinate the pupils and give them a taste for study.

Woman writer (poetess, novelist); teacher for writing; producer of poetic shows; Surrealist and symbolic painter whose works are displayed in France and abroad. Marièva Sol is also working for embellishment of churches and convents.

Member of several associations : Académie Européenne des Sciences des Arts et des Lettres, Société Académique des Arts des Sciences et des Lettres, Amitié Judéo-Chrétienne de France, ARTEC, Europoésie, La Ruche des Arts.

RAMPAAP: Augmented Reality versus Enhanced Reality - an (exploratory) Arts Based Project in an Anatomopathology Laboratory

Sérgio Eliseu, Paulo Bastos, Maria M. Lopes and Manuela Monteiro

ID+, University of Porto (sergio@eliseu.com), ID+, University of Aveiro (pbernard@ua.pt), ID+ University of Aveiro (maria@manuelalopes.com), Institute of Ageing and Health, Newcastle University (mmapgfm81@gmail.com)

As artists and researchers devoted to explore possibilities to extend the knowledge through visual and material practices and empirical methods we propose to partially overcome the handicap anatomopathology education faces, by introducing Augmented Reality (AR) visualization practices in the equation. Medical digital images have been the central reference in linking different creative fields such as design, computer animation or virtual reality. As artists we claim we have a role to play when we consider not the end product (such as MRI, endoscopy or microscopy) but by exploring the underlying processes of constructing the images, in which the visual has a key function. RAMPAAP is an work in progress conceptually defined as an exploratory practice in AR technology, relating research from the areas of Art and Design (which focus, among other things, the specifics of interfaces and their respective relationships and interactions human / machine / artifact) with the methodologies exercised daily in two specific laboratories of Anatomic Pathology – one researching cancer and the other dementias.

The main aim of this project is to investigate how AR technology, and more immersive display technologies, when located in the center of an ArtScience collaboration, can be explored in order to produce high quality science informed artistic projects and also generate interfaces to be used within the realms of medical education and training. Our goal with this interdisciplinary and extraterritorial, highly skilled team and this unique and visionary project is to contribute to the enhancement of reality in the research across fields, adding a surplus socially engaged value for addressing an ethically challenging theme such as cancer, dementia and pathology, achieving an interface and software application of interaction with real pathological tissue, and by extending the perspectives and boundaries on science and art practice as research.

This team previous succeeded experiences when working in scientific collaborations and laboratories, revealed in numerous publications and public exhibition of art works as result, allow us to claim that when crossing territories the result is thrilling new transdisciplinary knowledge and innovative understandings. [1, 2]

1. Sérgio Eliseu and Manuela Monteiro, “Projecto ARnatomia Patológica” *ARTECH-2012 Conference on Digital Arts and New Media*, 385-388 (2012).
2. Manuela Lopes, “Representational Strategies on Alzheimer’s Disease: A Practice-Based Arts Research in a Neuroscience Laboratory” University for the Creative Arts, Farnham, UK (2013).

Sérgio Eliseu (MA) PhD candidate at Fine Arts School of University of Porto (FBAUP).

Paulo Bernardino Bastos (PhD) director of the Post-Graduate Program (Master) in “Contemporary Artistic Creation”, in the Department of Communication and Art at the University of Aveiro (Portugal).

Maria Manuela Lopes (PhD) visual artist and researcher in Art, Science and Technology.

Manuela Monteiro anatomopathology technician at the Newcastle Brain Tissue Resource, Institute of Ageing and Health, Newcastle University.