The Making of Sci-Art
Terry Trickett in conversation with Cynthia Pannucci

Abstract
Towards the end of the last century, initiatives aiming to bring the arts and sciences closer together started up almost simultaneously in different parts of the world. In this conversation, Cynthia Pannucci, founder of ASCI (Art & Science Collaborations, Inc.), New York, engages Terry Trickett in a lengthy exchange of views focused on the UK’s Sci-Art initiative, sponsored by the Wellcome Trust. The result is a history of the early days of Sci-Art told by Terry Trickett who was closely involved in the initiation of the project back in the mid-1990s. It’s a personal account of how it all started and the fortuitous combination of circumstances that enabled it to prosper for 10 years. As a series of recollections, prompted by Cynthia’s questions, they give some insight into the impact of Sci-Art on the scientists and artists who participated and the powerful force for change that the project engendered. For many involved the results were life changing and life enhancing, not least for Terry Trickett who, at long last, has responded to Roger Malina’s request to trace the course of Sci-Art’s inception and success.

Terry Trickett (TT): Cynthia, if you’re the mother of Sci-Art, I must be the father!

Cynthia Pannucci (CP): Terry, was it you who invented the word Sci-Art, planted the seed and gave initial guidance for such a program at the Wellcome Trust, London? I remember it was Laurence Smaje, Director, Wellcome Centre for Medical Science, who gave a keynote at our ArtSci’99, second international symposium on collaboration between the arts and sciences. He gave us some insights into the early successes of Sci-Art. I must say, I’d like to know more. I’m also wondering whether or not Wellcome’s Sci-Art program was perhaps the inspiration for the famously successful Science Gallery Dublin and what has become, now, the Global Science Gallery Network.

To provide a taste of what was achieved by the Sci-Art initiative in its early years, the stories of four ‘exemplar’ projects are related here, in the sidebar. Projects are color coded to facilitate the tracing of each project’s progress from ideas generation to production.

What prompted the conversation?
I need to explain how this conversation started. In the ‘Straight Talk’ section of a recent edition of SciArt Magazine (August 2018), the question was raised: Is Cynthia Pannucci the mother of SciArt? [1] At the same time, in acknowledging that probably there were several fathers, the author, Gayil Nalls, who had created the featured video interview of Cynthia, went on to say that Cynthia is the mother who nurtured many careers and helped establish ‘art-sci’ as an international field. Her Art & Science Collaborations Inc. (ASCI) website (www.asci.org) has not only provided the science-art community with important information and opportunities but, also, it has been a source of constant inspiration. As I believed I might be one of the possible ‘fathers’ of the Sci-Art movement, Gayil Nalls’ observations prompted me to start a conversation with Cynthia that has led to me putting on record how the Sci-Art initiative started and then prospered in the UK.

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EXEMPLAR 1, AFTER IMAGE
New insights into the phenomenon of the ‘phantom limb’ as experienced by many amputees.

EXEMPLAR 2, FIXING THE EPHEMERAL
The discovery that a plant’s suicidal tendencies can be reversed by ‘modulating’ the expression of its green gene.

EXEMPLAR 3, BIOTICA
The creation of an interactive installation which gives insight into how molecular forces create order and form.

EXEMPLAR 4, PAINTERS EYE MOVEMENT
The realization that painters’ exceptional control over their eye movements is a skill that can be transferred to others.

EXEMPLAR 1, AFTER IMAGE
In 1996, Alexa Wright, an artist working in digital photography, wanted to explore the phenomenon of ‘phantom limb’ experienced by many amputees. It was only after receiving the first Sci-Art ‘Call for Ideas’ that she felt she had the status (her word) to approach experts on the subject, neurologist John Kew and neuropsychologist Peter Halligan, to discuss her idea. During a five hour conversation, the scientists described phantoms and discussed the potential causes. Subsequently, the artist and scientists together made a successful application for a Sci-Art Award.

It’s interesting that so many similar initiatives started up almost simultaneously in different parts of the world. The Network of Art and Technology (ANAT) was founded in 1988, the same year I founded ASCI. Sci-Art followed shortly after. I’m wondering perhaps if it’s time to create a historical legacy for our field?

TT: You’re prompting me to tell you something about how Sci-Art started. First, I’ll explain the name. I’d written a Call for Ideas for the first Sci-Art competition (1996-97) that was being vetted by Wellcome’s legal department and others. Wellcome’s research scientists, in particular, took exception to the title I’d given the initiative - Facts and Fancy - after Nabakov’s ‘butterfly’: there’s no science without fancy and no art without fact [2]. Ken Arnold (then, Wellcome’s exhibitions officer) and I decided we had to find a new title. Driving to work the next day I shared the problem with Lynn (my wife), who you know, who immediately came up with the suggestion of ‘Sci-Art’.

Sci-Art, in the mid 1990s, was an idea whose time had come; it was no coincidence that your ASCI and other initiatives with similar aims all started within a few years of one another. Sci-Art did help to kick start a new way of discovery (as did ASCI) that has had a lasting impact; it’s given rise to a whole new range of initiatives world-wide. In retrospect I can see that Sci-Art has moved on from being merely an idea to a point where it’s gathered an unstoppable momentum for change affecting the teaching, studying, scientific work and art practice both in universities and outside.

You might want to look at the Legacy of Sci-Art where, some years ago, I examined Sci-Art’s potential impact on the Creative Economy [3].

CP: Thanks, Terry: I didn’t know your architecture-design company designed The Wellcome Trust’s headquarters in London, and designed its first exhibition! Architecture itself is a sci-art collaborative effort, so you were a natural to envision this idea. Intriguing to know that it was your wife who actually coined the term ‘Sci-Art’ which was then embraced with funding from the Wellicome Trust. And was it Charles Landry who developed the Sci-Art idea with you? Sure did not hurt to have such a renowned cultural innovator and author (who coined the term ‘Creative City’) working with you on the initial phase of Sci-Art - just shows what a good Idea plus a lot of money can do!

TT: Cynthia. I need to put you right on just one point. We (ie Trickett Associates) didn’t design the headquarters for the Wellcome Trust but we were responsible for moving a whole range of Wellcome departments into 210 Euston Road (opposite the headquarters). These groups of people were all involved, in one way or another, in the Public Understanding of Science; the move succeeded in bringing together all the components of Wellcome that were not directly concerned in the sponsorship of medical research – typically the photographic department, video group, Tropical Disease resource etc. Laurence Smaje was in charge and his aim was to improve communications between all these people. Our role was to assess requirements, plan and design space – a task that enabled me to get to know many of the scientists involved. They proved to be an unusual bunch; Laurence set up a first meeting where I outlined the information we would need. Subsequently, in talking to them individually I found that they’d all prepared masses of closely analyzed material explaining their work processes and needs etc. I can
assure you this is very unusual; more often, crucial information has to be dragged out of people who seem to think we can design without knowledge or an awareness of what the future might bring. This whole procedure was the start of process that cemented a close working relationship between me and Wellcome. I’m telling you all this because it set the scene for the eventual extra-curricular activity of Sci-Art.

At the end of the job, with a happy client, I had a head-to-head with Laurence in which I put forward my hare-brained suggestion for Wellcome’s millennium project – totally undefined but vaguely on the theme of Science joining with Art in one way or another. He was very receptive. His way forward was ‘to have a word with the chairman’. It worked; the chairman, Roger Gibbs (who I had met previously) said we won’t do it as our millennium project; we’ll do it anyway. The point here is that many things conspired together to make Sci-Art a possibility – my very good working relationship with Wellcome, Laurence’s immediate positive response and the informal procedures by which the as yet unnamed project got the green light. This could never happen now with today’s box ticking mentality.

I don’t want to give you the wrong impression. From your comments on ‘lots of money’ I think you might think that extracting money from Wellcome was an easy task. It wasn’t; it took a year’s work before a proposal could be put before a committee of the great and good (the Wellcome Centre Committee). This, in itself, was an interesting process. Laurence had told me to prepare a paper no longer than four pages. Once it was produced he asked me what I was going to put at the bottom! With tongue in cheek I said three million. His reply: if you put 100K (100,000 UK pounds) you’ll probably get it. Neither of us knew, at the time, that after 10 years of inspired sponsorship, Wellcome’s total spend would be three million!

My anecdotes are endless but I can see now that, in response to your prodding and probing, I am beginning to put down, from an entirely personal point of view, what I think has been learned from the Sci-Art experiment. Not before time because some years ago, in conversations with Roger Malina (Executive Editor, Leonardo), he encouraged me to write a history of Sci-Art’s early days. At that time, the idea of writing a monologue didn’t appeal to me and my priorities lay elsewhere – in producing new projects rather than harking back to the past. But, now, Cynthia, you’ve changed all that.

CP: I’m glad; I’ll carry on commenting and asking questions. This ‘gaining of trust and sense of rapport’ that came from your company’s involvement at Wellcome reminds me of a comment made, many years ago, by one of my NYC Foundation contacts: “We give to people, Cynthia, not to ideas - at least that is what first draws our attention to new ideas.”

I’m still curious about one more thing: did Charles Landry contribute to your initial Sci-Art efforts in any meaningful way?

TT: Charles was invaluable during the setting up of Sci-Art, in two separate ways. I mentioned that it took a year from obtaining the green light to submitting a costed proposal for Wellcome’s Science and Art project. Remember that nobody knew, at the time, what form the eventual project might take nor, in fact, whether or

**Figure 1: After Image RD2. (© Alexa Wright)**

Alexa’s digitally adjusted photographs of people with amputated limbs raised questions not only on the public’s attitude to physical differences and disabilities but, also, caused Alexa to realize that she had something to offer the science community.

Conversation Piece, which received a Sci-Art Award in 2006, was just one of numerous follow-up projects carried out by Alexa and her subsequent scientific partner Alf Linney, Professor of Medical Physics, Centre for Auditory Research, University College London.
not there existed any appetite for such an event. So two things then happened:

First, Laurence and I set up an informal committee to hammer out the idea; he nominated three science people and I nominated three arts people. Second, I was given a research grant to investigate how the world at large might respond to a science-art initiative to be promoted, in one form or another, by Wellcome. Quite deliberately, the terms of reference were not defined in detail.

The co-opted scientists on the committee were:
Matthew Holley, Royal Society University Research Fellow, Department of Physiology, University of Bristol.
Mark Hanson, Professor of Fetal and Neonatal Physiology, University College London.
Ken Arnold, Exhibitions Officer, Wellcome Centre for Medical Science.

The co-opted artists/generalists on the committee were:
Charles Landry, Comedia
Eileen Hogan, Professor in Fine Art in the C.C.W. (Camberwell, Chelsea and Wimbledon art schools) Graduate School.
Dan Fern, Head of the School of Visual-Communications and Chair of the International Development Group at the Royal College of Art.

In addition:
Laurence Smaje, Director, Wellcome Centre for Medical Science
Steve Emberton, Wellcome Centre for Medical Science
Terry Trickett (chairman), Trickett Associates

After the first year I co-opted one further member on to the Committee:
Charles Saumarez Smith, Director, National Portrait Gallery, London.

The committee worked very effectively with many positive ideas forthcoming which enabled me to put together the eventual four page proposal. Throughout the whole process Charles Landry was my main 'confidant'; normally I checked the draft of my minutes with him before sending them out. He had considerable enthusiasm for the ideas that lay behind the project and, of course, with his background in the ‘Creative City’ he was well able to suggest ways of proceeding that other members of the committee could never have envisaged [4]. In particular, it was his contacts throughout the UK (and elsewhere) that enabled me to investigate and gain some insight into how such a project would be received countrywide. It took me to places like Bristol and Manchester where everybody I met supported the idea in the knowledge that Wellcome had the where-with-all to make it work. I’m not convinced that my eventual report was particularly valuable; at the time, the concept of ‘partnerships’ had not emerged and, in conversation with Ken Arnold, I think both of us thought that the eventual outcome would be a large scale travelling exhibition (with separate modules devoted to various scientific disciplines). I was relishing the opportunities offered by this job! In the end, however, at a crucial meeting of the committee, Dan Fern, I think, put forward the concept of a competition to engage the minds of partnerships between a scientist and an artist. Laurence seized on this idea and, again, the rest is history.

Conversation Piece is described by Alexa as an intelligent room that can hold conversations with its occupants:

“In this interactive audio installation, visitors encounter up to three small sculptures displayed on plinths. People are tracked as they enter the space, and anyone passing close to one of the sculptures is greeted by a disembodied voice which then tries to engage the visitor in conversation. Using keywords to interpret what is said in reply ‘Heather’, the disembodied voice, conducts conversations with individuals at up to three different locations in the room.”

Conversation Piece has brought together existing and emerging technologies for speech and

Figure 2: Conversation Piece, Installation shot at ISEA 2009. (© Alexa Wright)
hearing and introduced people and ideas from various scientific disciplines to one another. As Alf Linney confirms:

“It is beneficial to the collaborative partnership when the artist can learn about science, contribute to the extension of scientific language and processes and help develop new scientific methods.”

Figure 3: ‘Testament’, living grass photo. (© Studio Ackroyd & Harvey)

EXEMPLAR 2, FIXING THE EPHEMERAL
In 1996, artists Heather Ackroyd and Dan Harvey were creating extraordinary living grass photographs, like the one shown above which was displayed in the Ice House, Hull, UK. Unfortunately, these images lost their greenness fairly quickly. The artists became aware of the work of the Institute of Grassland and Environmental Research (IGER) through publicity about scientific research on stay-green grass. They visited Howard

Figure 4: ‘Look Hear’ at the Wellcome Trust’s 210 Gallery, an exhibition curated by Ken Arnold and designed by Trickett Associates. (© Trickett Associates)

I should say, at the outset, that the Look Hear exhibition was an unexpected and outstanding success. It captured the interest of both the scientific and arts communities as well as gaining an extra audience from passers-by. Ken, who curated the exhibition, had the initial idea that the science and art should be separated

CP: How did you build on this idea of partnerships? I think, at one time, I had formed the opinion that Sci-Art projects were commissioned but I gather, now, that ideas emerged from a competitive process. Clearly, this was a radical decision. How did it work?

TT: Let me take a step back before answering that question. In my work for Wellcome I’d gained some insight into its modus operandi largely because all the scientists within the Wellcome Centre for Medical Science had been exceptionally open in defining their own work experiences and expectations for the future. They were all intent on learning from the past in order to define how Wellcome’s role could be further developed in promoting the public’s understanding of science and, conversely, scientists’ understanding of the public. To this end, early in the 1990s, Laurence had led a team that produced ‘Science for Life’ – an award winning exhibition that displayed the processes of medical research as well as its products. Initially central to Wellcome’s efforts to engage with the public, the success of Science for Life gradually developed into other approaches including dramas taken to schools, exhibitions in public spaces such as the annual London Motor Show and displays in train station concourses and shopping malls, all aimed at raising issues arising from advances in genetics and problems in mental health. It was this background in promotional activity, highlighting the Trust’s program of research, that fostered an unusually receptive attitude to innovation in the minds of Wellcome’s people, as was demonstrated by another event that became an immediate precursor to Sci-Art.

Matthew Holley, sometime before the formation of the committee, had approached Laurence with an idea for an exhibition which embraced both the science and art of the inner ear. In his Bristol lab, he had delved deep to reveal the patterns of sound-capturing fibers found in the cortex of the ear. Inspired by these marvelous images, Matthew’s artist colleagues at Bristol had produced a range of art works which celebrated his ground-breaking research. Laurence took to this idea because, in designing the 210 installation, we had expanded the ground floor reception area to include a street level exhibition space. The ear exhibition would be an effective way of announcing it as Wellcome’s new 210 Gallery.
green grass. They visited Howard (Sid) Thomas, Head of Cell Biology, and Helen Ougham, Principal Research Scientist at IGER, Aberystwyth to explore the possibility that the use of stay-green grass would preserve their images longer than conventional grass. The artists and scientists immediately struck up a close personal rapport and began to develop ideas for a collaboration.

Figure 5: ‘Stoma’, living grass photo. (© Studio Ackroyd & Harvy)

As a first stage, a Sci-Art Award enabled Heather and Dan to work as artists in residence at IGER. Sid Thomas has total recall of what then happened when the artists first presented their living grass photograph, ‘Stoma’, (see above).

“At that point the realization dawned that the visual information in the work resides not just in the distribution of shades of pigmentation but also in the textures, orientation and nearest-neighbor interactions of the individual plants. This in turn led us to new insights into the interactions between vegetation and the light environment.”

but we suggested to him that it might be more effective to juxtapose works of art against the electron microscopic images of the ear in order to better explain the concept of ‘seeing the way we hear’. This approach also explained the title of the show – Look Hear (Figure 4). The exhibition hadn’t been specifically designed to travel but, nevertheless, it toured the UK for a period of two years. Its success was a key turning point in the mind-set of Wellcome; it established the idea that the introduction of art could assist in the ‘public’s understanding of science’ and, also, garner publicity which showed the work of the Trust in the best possible light.

As ever, timing is all; ‘Look Hear’ had produced its impact at just the right time to influence Wellcome’s positive response to an initiative that became known, eventually, as Sci-Art. There was no stopping it now; a ‘Call for Ideas’ was distributed and by the end of February 1997, 225 applications had been submitted, from a total of approximately 1000 artists and scientists. The amount of applications received far exceeded initial expectations and the scope of art forms and scientific subject matter covered was as broad as we could have hoped for.

The assessment of the six projects which then received funds for development was, in itself, an interesting process. I was chairman of the panel for the first year (and the second) which comprised all the committee members mentioned above. We all had our favorites but, in the end, it became clear, as a result of an interview process, which projects might best gain from further thought and development. I’m not giving a complete list here but a glance at the four ‘exemplar’ projects inset in the sidebar (two from Sci-Art I and two from Sci-Art II) will provide a taste of what we experienced in those early years. In assessing ideas in their infancy, I’m confident that we avoided the danger of choosing projects where the end result could be predicted in advance with the result that we found cutting-edge examples of combined creativity which grew and prospered often beyond the confines of the Sci-Art remit. As Sci-Art I projects gained much publicity and credibility for the concept, Wellcome was encouraged to continue with a second year’s competition, Sci-Art II, following much the same pattern.

CP: Thanks for all your time in providing such detailed and thoughtful replies. I really love all the anecdotal human-interest stories because, for anyone that’s interested in this sci-art history, they show how there is no such thing as a ‘straight path’ when you are dealing with new ideas.

For me, a real boon for ASCI has been the long-term (since 1994) support and friendship of Marcia Rudy. She saw a small ASCI Members group show I curated in 1992 at the Snug Harbor Cultural Center on Staten Island, ‘The Pull of Kinetics’, and then invited me to expand on that show for The Great Hall at the New York Hall of Science, where she was the Director of Public Programs for over 20-years. During that time, she became Board President of ASCI. Her professional and personal friendship has been a real ‘stabilizer’ for me; it’s helped me to negotiate the ups and downs of keeping a non-profit going. I see now that for any venture to sustain itself, you need some sort of ‘partner’, especially when there is no money for support staff, as was the case for ASCI most of our years. So please continue and let me hear about the
The progress of FIXING THE EPHEMERAL over the years has been remarkable. The 'science' of Heather and Dan’s grass photographs has become a source of fascination for many gallery curators. As Heather explains:

"Mother and Child, our first artwork using IGER’s stay-green seed, was shown, in 1998, at the Santa Barbara Museum of Arts. Subsequently, in 2001, at an exhibition in Boston, the Santa Barbara Mother and Child was brought out of storage and placed near a freshly grown piece."

Figure 6: ‘Mother and Child’, living grass photo. (© Studio Ackroyd & Harvey)

‘serendipitous’ aspect of initiating the Sci-Art program at Wellcome.

TT: Interesting to hear about your early experiences. As you know I’ve been an ASCI member for some years; I’ve always found your ASCI eBulletin an invaluable source of information on what’s happening in the ‘art-sci’ community worldwide. Often, it’s your advance knowledge that has made me aware of events taking place in my own backyard! An early announcement that took my interest was your invitation, in 2010, to submit artwork to ASCI’s exhibition to be held at the New York Hall of Science on the theme: Mysteries in Science. This occurred right at the beginning of my own involvement in digital art; I’d just begun to produce still images based on my travels to various parts of the world. Much to my delight my submissions were accepted. Ever since then, explorations in digital art and Visual Music have become a mainstay of my on-going creative life. ASCI gave encouragement to me just as it has to so many other artists. It’s a marvelous achievement all down to you, Cynthia, although I’m sure that, over the years, there was a considerable amount of serendipity involved in keeping ASCI alive just as there was in launching and nurturing Sci-Art in its early years.

Time now to take up the point you made about the longer term impact of Sci-Art on Wellcome’s on-going activity and its influence on others with ambitions to bring the cultures of art and science closer together. To take one example, the one you mentioned earlier in this conversation: the Global Science Gallery Network, pioneered by Trinity College Dublin, gained not only from Wellcome’s sponsorship but, also, as you imply, from the Sci-Art experience. I visited Dublin myself, at the request of the Arts Council of Ireland, to talk about the ideas that lay behind Sci-Art and their potential relevance in spearheading similar initiatives in Ireland. I became well aware that there existed, in Dublin, a climate ready for experiment and a willingness to learn from the successes of Wellcome’s inspired sponsorship. It’s no surprise, therefore, that Science Gallery Dublin became and remains hugely successful. Now, as part of the Global Network, Science Gallery London has recently opened under the leadership of Daniel Glaser who, previously, was Head of Engaging Science at the Wellcome Trust where he was responsible for all external funding for public engagement and the arts. Acting as the key link between Wellcome’s Sci-Art and the Global Science Gallery Network, Daniel would have known about Insight and Exchange (a commissioned evaluation of the Wellcome Trust’s Sciart [aka. Sci-Art] program) published by the Trust in 2009 [5].

This evaluation provided useful insights into the "lessons to be learned from visual arts projects which involved an artist and a scientist in collaboration to research, develop and produce work which explored contemporary biological and medical science”. The report assesses the ‘ethical capital’ achieved by a scheme where "artists were, in effect, acting as the public’s representative. A significant aspect of the artist’s contribution to ‘public engagement with science’ was thus as independent scrutinizers – asking questions and provoking insights that might not otherwise have surfaced, either from the perspective of the general public or from within the scientific community itself.” Further, ‘catalytic capital’ was achieved "as there was clear evidence of Sciart being a catalyst for ongoing collaboration and innovation” and under the heading ‘personal capital’ “a significant
This experience revealed that, as long as photos had been displayed in museum conservation conditions without exposure to direct sunlight, their greenness could be preserved; the ephemeral could be fixed! Similar grass artworks have been created round the world ever since.

On the science side, many stages of development have taken place since 1997. Sid Thomas sums up progress as follows:

"The Sci-Art Award led to a DEFRA (Department for Environment, Food & Rural Affairs) project to develop imaging as a tool for crop monitoring. Subsequently, the remarkable outputs from a study for PIMHAI (an acronym for a EU-funded project on hyperspectral imaging from planes) convinced us, and others, that monitoring land use from airplanes will greatly enhance our ability to 'read' landscapes."

EXEMPLAR 3, BIOTICA
Igor Aleksander, Professor of Neural System Engineering at Imperial College, remembers Richard Brown, Research Fellow in Computer Related Design Research at the Royal College of Art, coming to see him early in 1998 to discuss how neural nets could be incorporated into a dynamic and interesting computer generated minority of the scientific interviewees reported that working with an artist had enabled them to discover a creative dimension that had, to some degree, been sacrificed because of the professional protocol and conventions that were involved in being a scientist". Overall, "the evaluation showed that considerable innovation, new explorative processes and methods of working and interesting outcomes had occurred that had attracted a high level of public and media interest".

CP: Those comments are particularly revealing about the scientists’ perception of their involvement. I think that was a strength of Sci-Art from the very beginning; Wellcome, as a science based organization, was able to bring Sci-Art to the attention of its research scientists at the outset of the scheme. By contrast, ASCI has always been more 'arts-centric' although, over the years, scientists have joined our community in increasing numbers.

TT: I’ll explain later how Wellcome sought to adjust Sci-Art’s balance between science and art. For the moment, its enough to say that, by the time the scheme finished in 2006, Sci-Art had become well established in both the worlds of science and art – a fact which encouraged Wellcome to build on its newfound knowledge of both cultures by launching a program of Arts Awards in 2007. In addition, with the opening of the Wellcome Collection, a public event space that explores medicine, life and art, the Trust has aimed to strengthen its commitment to exploring the cross-disciplinary nature of the world of medicine and how science impacts on people’s lives. Sci-Art projects, which form the focus of many displays in various spaces and places within the Collection, play an important part in conveying Wellcome’s message. All in all, the evaluation of Sci-Art together with its on-going influence tell a story of almost unbounded success.

I remember attending Dan Fern’s retirement party at the Royal College of Art where, in a conversation with Christopher Frayling (then, chairman of the Arts Council England), he said to me that they all thought of Sci-Art as an exemplary piece of sponsorship. Although this comment was music to my ears you might be surprised to learn, Cynthia, I didn’t entirely agree with him. But it was exemplary at the beginning; at that time, 1995, no other organization in the UK apart from the Wellcome Trust would have been prepared to take such a step into the unknown. With few exceptions, previous funding sources had operated within the disciplines of science or art and not in both which meant that Laurence’s ‘word with the chairman’ could offer no strong case for support. It required a serendipitous leap of the imagination and a lucky convergence of events, as I’ve explained earlier, to enable the birth of Sci-Art. But, it happened as in the Three Princes of Serendip, “where heroes make discoveries, by accidents and sagacity, of things they were not in the quest of”. Because, of course, nobody knew where the ideas that lay behind Sci-Art would lead [6].

So far, I’ve quoted from an evaluation which makes no attempt to convey either the unexpectedness or magic derived from some submitted projects. Nor does it reveal the individual and shared sources of creativity, ignited by artists and scientists alike as they pooled thoughts and ideas which, often, stretched the boundaries of credibility. I was fortunate, in the first two years of Sci-Art, to be in a position where I was able to see, at first hand, the unfolding of a new form
work of art. Igor was impressed with Richard’s idea to interconnect the neurons to their neighbors through ‘springs’.

**Figure 7: Biotica, immersive experience of emergent artificial life. (© Richard Brown)**

Richard remembers this first meeting differently; he found Igor’s visualization of neural nets very flat, two dimensional and purely informative. The breakthrough, which led to a successful application for a Sci-Art Award, was seeing how two dimensional information could be re-represented in a dynamic form in three dimensions with movement and color acting as additional dimensions. This is how Biotica started. Both Igor and Richard were working at the cutting edge. As Richard puts it:

“We decided to pursue the quest for the A-life philosopher’s stone – emergence; we wanted creatures to spontaneously emerge from a primitive soup rather than craft them by hand.”

of creativity exactly as George Steiner had predicted in his book, Grammars of Creation [7]:

“In a world increasingly dominated by the sciences and their technological applications, progress will be informed by a ‘new code of the collective’. Here, the arts and humanities, where traditionally singularity and solitude are of the essence, will join scientific discovery and technological investigation by taking place in a spirit of partnership and sociability.”

The Sci-Art experiment gave me and other members of the committee a first glimpse of just such a landscape where science and art could be melded together in a ‘spirit of partnership and sociability’. We all became aware that something extraordinary was happening and, possibly, it was Charles Saumarez Smith who was the first to recognize, in those early days, that the unexpected nature of the results of the first year’s competition would attract a considerable amount of publicity and media attention. Paramount among these was Primitive Streak – a collection of 27 dresses created by Helen Storey and her sister Kate, a developmental biologist, which were inspired by the first 1000 hours of human life from fertilization to a recognizable human form.

**CP:** I remember seeing those dresses when they came to New York; it was one of the first events that alerted me to what Sci-Art was achieving. Wellcome’s stipulation that participants in Sci-Art must be UK based didn’t prevent the results becoming known internationally. As I mentioned at the outset of our conversation, Laurence Smaje became a keynote speaker at ArtSci’99, ASCI’s second International Symposium held in New York City. I remember, at the time, we discussed many key questions raised by emerging signs of increasing science-art activity. In particular: “Is the trend toward increased communication and cross-disciplinary inspiration and influence a pre-millennium bandwagon or a true Renaissance?” Are we now ready to answer this question, I wonder?

**TT:** Maybe not, but, as in a true Renaissance, Sci-Art did change lives. It was the processes of working in partnership rather than the outcomes that gave signs of a ‘new code of the collective’; Sci-Art revealed that both the outlook and working methods of scientists and artists could be influenced positively by the new explorative methods of working encouraged by the Sci-Art competition. But, I don’t think that the Wellcome Trust, back in the mid-1990s, could ever have anticipated that it’s backing of a hare-brained idea could have unleashed such a powerful force for change. It seems that Sci-Art was an idea whose time had come. The initiative caught a tide of change that was inevitable; many of those who were skeptical or even belligerently opposed to the idea at the outset underwent a Damascene conversion, although it took time – a period of ten years or more. Steven Webster, writing on the subject of Art, Science and the Public, in 2009, found evidence that the Wellcome Trust’s science-art initiative gave signs that artistic practice could indeed find expression in scientific work, both technically and conceptually [8]. He went on to say that “we should think of these projects as prizing open science, and, perhaps unexpectedly, finding space to work”. Further, “when we consider as well the way these projects often gain such public interest, we can conclude the place of art in science is now secure”. This accolade represents a huge achievement for which
BIOTICA led to a spin-off project, **Millie the Neural Net Starfish**, which was first exhibited, to great acclaim, in the Mind Zone of the Millennium Dome, London. Millie was designed to be an entertaining and engaging experience of a visceral and accessible form of artificial life. The interactivity is extremely clear; people reach out to the starfish and a tentacle moves towards their hand. You could swear that the creature is alive! Millie lives on and was featured in 2006 at Kinetic, a new gallery in Spitalfields, London, dedicated to kinetic art, and in 2012, given a new name as the ‘Mimetic Starfish’, Millie appeared at Emocao Artificial, Biennale, San Paolo, Brazil.

Sci-Art must take a significant share of the credit. Within its ten year life span, it did indeed turn the minds of skeptics.

The signs of Sci-Art’s life changing and life enhancing capabilities were evident from the beginning. Apart from ‘Primitive Streak’, where siblings forged a new close relationship as a result of one of them, Kate, receiving Wellcome’s ‘Call for Ideas’, there were many others who responded with similar flights of fancy. It was as if such pent-up ambitions had been simmering for some time; it took only the lighting of a touch-paper to cause an explosion of extraordinary ideas. Of the many that submitted only a few could receive funds for bringing their ideas to fruition. Your NYC Foundation contact was right when he/she said that it’s people, even more than ideas, that draw the attention and give intimations of eventual success. What we were looking for, as a committee, were partnerships where artists could find space to work in science and scientists who gave signs that they would discover some new creative impetus through art. As you know, we found them.

**CP:** Terry, you and I are talking as if we were the first into this hybrid field of activity. It’s important, I think, to remember that, long before ASCI and Sci-Art, Frank Malina, in 1968, set up Leonardo, an international peer-reviewed research journal that featured articles written by artists on their own work and focused on the interactions between the contemporary arts with the sciences and new technologies. The *Leonardo Journal* continues today as a project of the International Society for the Arts, Sciences and Technology (ISAST). Frank’s son Roger now serves as Founding Chair Emeritus and member Leonardo/ISAST Board of Directors.

**TT:** Thanks for that timely reminder. Last year, I attended one of the first of Leonardo’s 50th birthday celebrations held in Plymouth, UK. Appropriately, the venue for the party was the Eden Project in Cornwall which features two ‘biomes’ – the first simulating a rainforest environment and the second, a Mediterranean environment. Hosted by Roger, we all had a great time.

Returning now to the Making of Sci-Art, it was in 2007 that I first had an opportunity to look back on the ground-breaking trajectory of the project; I was asked to give a presentation at Creative Clusters, Fifth International Conference on the Creative Economy, held in London [3]. To illustrate the successes of the Sci-Art method, I told the stories of four ‘exemplar’ projects, initiated in the first two years (when I was still intimately involved), where the characters concerned, artists and scientists, gave candid opinions both on one another and on the learning curve they had undergone together. The information underlying these stories was readily available at the time. I contacted the relevant scientists and artists who were only too happy to share their thoughts (and give permission for publication). If I were to do the same thing now, it would be regarded, by many of the participants, as raking over old coals – valuable information historically, maybe, but no longer of pressing concern. The stories I’m telling here, in the sidebar to this article, are based on my presentation to Creative Clusters.
On these successes, Richard commented:

"I believe that Sci-Art projects tend to be cutting edge, and perhaps a little too ahead of their time. When BIOTICA was first created it really taxed the computer power of its time, now it runs easily and to greater resolution on modern machines."

On the fact that BIOTICA never achieved its full potential, Igor has forthright views:

"From a scientific point of view BIOTICA is fascinating and gives rise to speculation on the nature of new virtual organisms. But to hard-nosed entrepreneurs this does not feed into their thinking. Hard-nosed entrepreneurs feel that they know what triggers they need to advance their business and an even stronger way of being blind to the possibilities of doing things unrelated to their current business. But then the likes of Bill gates or Tim Berners-Lee do rather well and are thankful that not so many are as visionary as they are."

There’s no doubt that Sci-Art succeeded in tapping the urge, felt by scientists as well as artists, to find new methods of discovery. In all four ‘exemplar’ projects a Sci-Art Award kick-started partnerships into action. Often, this initial funding enabled projects to gather further funding from other sources once early progress began to show tangible results. And it’s these tangible results that form the Legacy of Sci-Art. The strength of AFTER IMAGE (Exemplar Project 1) lies in its implications for education; it has shown how an artist, in penetrating the realms of science, can not only learn about science but, also, help develop new scientific methods. Innovative thinking in the areas of agriculture and food industries, as generated by FIXING THE EPHEMERAL (Exemplar Project 2), has shown that rich rewards can be reaped from the commercialization of Sci-Art ideas. BIOTICA’s child, Millie the Starfish (Exemplar Project 3), has provided a source of delight and wonder wherever it has been exhibited, although the main project has failed to ignite the interest of entrepreneurs. PAINTERS EYE MOVEMENT (Exemplar Project 4) was instrumental in introducing a life-saving procedure into operating theatres world-wide. All in all, these four projects provide tantalizing glimpses into the nature and value of results that can be achieved by Sci-Art partnerships.

I must emphasize, though, that not all Sci-Art projects, even amongst those that benefited from funding, achieved the acclaim of my ‘exemplars’; the percentage of such successes is relatively small with many projects remaining fragile flowers which failed to blossom. But we shouldn’t regard these as failures; far from it; their success lies in the part they played in an experiment where each and every project assisted in pinpointing the hitherto under-recognized role of the arts in driving change and innovation. All of them succeeded in holding up a mirror to the future where ground-breaking discoveries can be made by encouraging scientists and artists to enrich and maximize each other’s potential.

CP: Terry, you’re making the whole Sci-Art experience come alive. I’m beginning to enjoy vicariously the excitement and magic of what you yourself experienced in running the project in its early years. Up till now all this has been missing but I should mention that, for me, one spin-off from Sci-Art was the way I recruited noted science professionals to juror, along with an art juror, ASCI’s international art-sci exhibitions held at the New York Hall of Science. This process began in 2006 with Digital’06: Bio/MedSciART where the science juror was Dr. Ray Kondatas, then Curator of the Medical Collections, Division of Medical Science at the Smithsonian in Washington DC.

TT: As I’ve already mentioned, I was delighted to take part in ASCI’s exhibitions. Now, in continuing my early history of Sci-Art, I’ll try to keep your interest in a story with many twists and turns.

For Wellcome, the run-away success of Sci-Art I presented a challenge. In advance of launching the competition, Ken Arnold had expressed Wellcome’s expectations as "simply a belief that something interesting might emerge from enabling collaborative work between scientists and artists". But what Claire Cohen (Division of Management Studies, Brunel University) had discovered, in her evaluation of Sci-Art I, were forces of collaboration that "in effect work together to stimulate a new kind of creativity, creating something which is a synthesis out of the scientific and
EXEMPLAR 4. PAINTERS EYE MOVEMENT

This project needs a little explanation. The eye is constantly moving as we see the world and as the brain processes the information received on the retina. An eye-tracker can measure these movements with great accuracy – it’s worn on the head like a bicycle helmet, allowing maximum freedom of movement. As well as providing numerical data for statistical use, a scene camera records the wearer’s view adding a small dot to indicate where the eyes are focusing.

John Tchalenko wanted to do a study using an eye-tracker to trace the eye/hand coordination of an artist drawing a portrait. This explains the project’s title, PAINTERS EYE MOVEMENT. John is the first to acknowledge that the Wellcome Trust’s support was absolutely fundamental in launching the project. He regarded PAINTERS EYE MOVEMENT as only a feasibility study; it was a further Sci-Art Award that enabled him to move the project forward into a closer examination of ‘Eye Control’.

This second stage united the skill of drawing with other fine-controlled skills – in particular, surgery. How did this come about?

artist mind” [9]. She also commented that most applicants found that the process of applying was valuable whether or not they had emerged as winners; the competition had stimulated some partnerships, even though they hadn’t received funding, to carry through their ideas further. The results of Sci-Art I also fulfilled Wellcome’s prime aim of furthering the public’s understanding of science. The ideas that underlay winning projects were widely disseminated through media coverage, exhibitions and public debate, which gave some insight on how artists had sometimes assisted in the processes of scientific investigation – a point made, in particular, by Hugh Aldersey-Williams in a piece written for the Independent on Sunday, 14 December 1997. (My exemplar projects all underwrite the validity of this observation.) It was, therefore, the abundance of riches thrown up by Sci-Art I that posed a significant challenge to it’s sponsor. Wellcome had unwittingly become engaged with a new type of creativity which, potentially, could lead the project in many separate directions. Which way should it go?

A cause of Sci-Art’s success was that it chimed with a concept, then current, of Britain as a ‘Creative Island’. Remember all this happened 20 years ago when a lack of confidence in Britain’s standing in the world had prompted the Design Council to commission a report, ‘Renewing our Identity’, where Mark Leonard, its author, defined creativity as “a state of mind that is restlessly looking for new ways of doing things” [10]. Sci-Art encapsulated this idea; not only was the timing right but, also, it responded to the report’s dictum that the country requires us to “remain a diverse and challenging society, resist pressures to conformity, value the new even if it is disturbing and see creative fields not as marginal but as central to our economic future”. Sci-Art appeared to embrace all these methods of cultivating creativity and therein lay its importance and strength. Sci-Art, in capturing the zeitgeist of the times, paved the way for Wellcome to move the concept forward by widening its remit and inviting others to share in the project’s success. It was Laurence Smaje’s realization that the science-based Wellcome Trust needed to work in partnership with others of similar standing in the art’s world that led to him charging me, working with Charles Landry, with the task of finding suitable partners and, at the same time, to give consideration to the wider issues affecting Sci-Art’s development.

Charles Landry’s prior knowledge of the UK’s various arts funding organizations proved to be invaluable at this point. His considerable knowledge on the creative use of culture in urban revitalization had brought him into contact with cultural leaders and multilateral institutions (eg. the World Bank) in over 30 countries. As a senior partner in Comedia, at that time Britain’s leading cultural planning consultancy, he had crossed paths with most cultural organizations in the UK and advised cities, in England, on their futures. As if this wasn’t enough, in 1995, the first edition of his book ‘The Creative City, a Toolkit for Urban Innovation’ had been published to great acclaim. But it wasn’t only Charles’ credentials that opened doors for us. The fame of Sci-Art had spread rapidly which meant that barriers were lowered by all the organizations we approached and doors flung open with enthusiasm.

CP: Good for you!
In advance of our trawl through the UK’s cultural institutions, I had begun work on Sci-Art II. Laurence and Ken had decided that the pattern of operation for 97/98 should follow closely the procedures adopted for Sci-Art I. Ken revised the Call for Ideas and I produced an interim report for submission to the Wellcome Centre Committee; funds needed to be approved to take the initiative forward into a second year. Not for the first time, the project nearly foundered at this point. Neither I nor Ken were allowed to attend the meeting of the great and good which included Bridget Ogilvie, Director of the Trust, the Director of the Science Museum, a number of Britain’s top scientists with chairman David Cooksey, a Governor of the Trust and secretary Laurence Smaje. It would have been fun to be a fly on the wall at this meeting; one of Wellcome’s research scientists was furiously opposed to the idea of Wellcome becoming engaged with the arts.

To name him here would be invidious but he expressed the view that the processes of science and art were forever incompatible – the one being subject to continual peer group review, the other subject to no form of rigorous external assessment. The chairman listened with interest and declared that if the concept of Sci-Art engendered so much controversy, then, of course, Wellcome must do it! The pioneering spirit of inquiry and adventure, which had driven Henry Wellcome in the first place, lived on.

So it was with a degree of confidence that Charles and I could start discussions with Wellcome’s potential partners. I remember one instance, in particular, at an initial meeting held in early 1998, when the Assistant Director General of the British Council announced on his arrival at Trickett Associates’ office: “I've got the cheque in my pocket”. It was an effective method of expressing his keen interest in a project that fitted well within the British Council’s determination to re-invent the way Britain presented itself overseas. Already, Mike Winter (head of art development) had begun to explore ways by which Sci-Art projects and events could be promoted on an international stage; the British Council aimed to establish a network (both virtual and real) to circulate information and projects to 230 offices round the world and, as the Assistant Director stated, they wanted to develop specific ideas for embedding Sci-Art into the British Council’s future operations.

Figure 9: Humphrey Ocean wearing an eye-tracker. (© John Tchalenko)

One principal finding from the eye-tracker study of portrait painter Humphrey Ocean at work was that his eye movements while drawing were different from his normal eye movements:

"While drawing, he made a sequence of regular single fixations on selected details of the model’s face. Each fixation lasted about 1 second and was repeated at a rate of about 12 fixations per minute. When changing his gaze from picture to model, or model to picture, Humphrey’s fixations unhesitatingly found and ‘locked’ onto the minute detail he was targeting. This behavior was in sharp contrast to that of the non-artist subjects we tested."

CP: I was always impressed that the British Council attended ASCI’s events; a representative came to ArtSci’01: Catalyst for Action. This was our 3rd symposium on collaboration held at CUNY Graduate Center, NYC. You were there, I believe, as were a number of Sci-Art partnerships because, by this time, in 2001, our two ventures had begun to develop a closer relationship. I remember it was Heather Ackroyd and Dan Harvey (artist partners of Fixing the Ephemeral) who presented grass artworks that had clearly had a fundamental influence on the investigative methods adopted by their scientific partners. It was an eye-opener for me that artists were able to exert this level of impact on projects that eventually gained considerable commercial value.

But, I’m digressing; please continue to tell me about your and Charles’ experiences in opening the doors of the UK’s cultural institutions.

TT: Indeed, those were heady days when the prospects for Sci-Art could not have seemed brighter. The Director of Policy at the Arts Council England,
But John and his scientist, Chris Miall (from the Sensorimotor Control Lab in Oxford) were well aware that their findings were not restricted to the subject of portrait drawing. A surgeon, particularly during minimal invasive surgery or laparoscopic surgery (popularly referred to as ‘key hole’ surgery) proceeds entirely from an image on a monitor screen using his/her eyes and hands to transform a starting image to another transformed image. Eye-tracking technology for investigating the surgeon’s eye-hand coordination is today in the process of being introduced within the operating theatre and, as a result, the prospect of finding ways of improving safety and training methods could be immense. An exhibition ‘How do you Look’ demonstrated these procedures. It was shown at venues in Nottingham, Maidstone, Hull and Leeds and, in 2006, at the Hunterian Museum, Royal College of Surgery, London.

As none of the eventual Consortium partners had worked together previously, it was an extraordinary testament to the innovative stance taken by the Wellcome Trust that partners in the new endeavor agreed, to some extent, to subjugate their own individual approach to cross-cultural activities to serve a common cause; both the Arts Council of England and the Calouste Gulbenkian Foundation had already initiated, in one form or another, ways of bringing the arts and sciences closer together but they realized that, another attendee at that meeting in my office, expressed an interest in becoming involved in the on-going evolution of Sci-Art. He had in mind the creation of a portfolio of Sci-Art ideas which would enable the Arts Council to ‘leverage’ resources for exhibitions and a program of lectures and publications. Laurence was delighted with the level of interest shown; it far exceeded all his expectations. He confirmed that the Wellcome Trust no longer saw itself as being the all-time owner of Sci-Art; its intention was to work with others in determining the future of the project.

But what was this future? It was Charles’ and my role to put forward some thoughts on how participating organizations, by working together, could extend both the range and significance of Sci-Art. To gain the attention of a wider audience, we proposed extending the project into other, non-biomedical fields of scientific and technical knowledge. Also, we suggested that a whole range of ‘delivery systems’ should be investigated for disseminating Sci-Art results via exhibitions, trade fairs and gallery events. Such thoughts always gained attentive nods of approval as did, initially, our thoughts for providing support for putting Sci-Art ideas into practice and helping them develop as potentially viable commercial products and services.

It was this last idea that appealed to NESTA (National Endowment for Science Technology and Art) a new organization set up by the UK Government, in 1998, to grow the creative economy by backing new ideas and helping arts and cultural organizations to thrive. Clearly, this was a remit to which Sci-Art could respond like no other. It was no surprise, therefore, that Jeremy Newton, NESTA’s newly appointed chief executive, responded with enthusiasm to the ideas that Charles and I presented to him. He saw immediately that by unlocking the potential hidden within some Sci-Art projects it would be possible to meet the UK Government’s declared aims to create an environment which fostered creative talent and innovation. By then, October 1998, the results of Sci-Art II had produced a series of projects which more than matched the high standards set by Sci-Art I. Together, they represented a core of successes that had already generated a life of their own with the scientists and artists involved continuing to give time to the further development of their projects. It was projects like these that needed to be brought before NESTA’s Trustees because they offered the potential for turning good ideas into something that could generate valuable services and, even, products. (My sidebar ‘exemplars’ illustrate four such cases, two from Sci-Art I, two from Sci-Art II.)

Jeremy was in pole position to make such recommendations because earlier, in June 1998, NESTA had become a key partner in what, by then, was known as the Sci-Art Consortium, joining with the Wellcome Trust, the British Council, the Arts Councils of England & Scotland and the Calouste Gulbenkian Foundation in an endeavor which would keep Sci-Art alive for another three years.
Acknowledgements

Terry Trickett is grateful for the valuable material and observations provided by the following scientists and artists who, between them, have been responsible for creating the remarkable exemplar Sci-Art projects described in this sidebar:

Alexa Wright, Assistant Research Fellow, EAR Institute, UCL
Alf Linney, Professor of Medical Physics, EAR Institute, UCL
Heather Ackroyd and Dan Harvey, artists
Howard (Sid) Thomas, Leverhulme Emeritis Fellow, Aberystwyth University
Igor Aleksander, Professor Emeritus in Neural Systems Engineering, Imperial College
Richard Brown, freelance entrepreneur at mimetics.com and Artist in Residence at the School of Informatics, University of Edinburgh
John Tchalenko, Camberwell College of Arts, Reader in Drawing and Cognition, University of the Arts London

These four winning projects (and 120 others) could not have happened without a decade of support and sponsorship provided by the Wellcome Trust.

in Sci-Art, there was an opportunity to engage with the public on a much wider stage.

The timing of NESTA’s birth was fortuitous; it had arrived on the scene at just the point when some Sci-Art projects were ready and waiting to make an impact on the newly acknowledged ‘creative economy’.

An evaluation of eleven potential contenders for ongoing funding that I prepared, in close liaison with Jeremy, set out for each project the extent of further research required, a proposed development plan and timing, details of proposed implementation procedures and a forecast of potential spin-offs. After presenting this to the Trustees, Jeremy reported that it was the first submission that had brought a smile to their faces. One such was Bridget Ogilvie, who by this time had retired from the Wellcome Trust; she was known to have whispered into Jeremy’s ear: “you know, it (Sci-Art) was one of the best things we ever did”. From then on NESTA started to fund the on-going development of selected Sci-Art projects as well as granting Fellowships to individual artists and scientist partners. In the case of Fixing the Ephemeral, one of the first recipients of NESTA’s funding, scientist partner Howard (Sid) Thomas reported that the project had literally soared skywards in a trajectory of success:

“Our recent projects can be traced back to the research direction stimulated by working with artists Heather and Dan with the support of Wellcome and NESTA. New opportunities continue to arise – for example an EU-supported collaboration with colleagues in Scandinavia has just begun and will explore the use of high-resolution imaging and machine learning to monitor contamination of dairy produce and animal carcasses early in the food chain. Here again there are opportunities to develop new Intellectual Property and exploitable technologies.”

It was projects like Fixing the Ephemeral and a few other ‘exemplars’ that convinced Charles and me that the Sci-Art initiative could advance beyond offering ‘something interesting’ to a point where new concepts developed by artists and scientists working in collaboration could become as ground-breaking as those that had launched the machine age. We felt that a rapprochement had begun to occur between the two great ways of exploration, understanding and knowing – art and science; it was by tapping into these processes of ‘boundary blurring’, thrown up by the Sci-Art method, that new methods of discovery could be found. Of course, I realize now that any attempt to realize these high-sounding ambitions was bound to be controversial, to say the very least. NESTA went along with our expectations, as did Wellcome and, to an extent, the British Council but the arts-based members of the Sci-Art Consortium were severely skeptical. In fact, when Charles and I, in June 1998, presented our ideas to the assembled Consortium, they were greeted by stunned silence. As Laurence confirmed later, in his minutes of the meeting, “a considerable degree of uncertainty was expressed by the notion of developing such ideas to the next stage, namely exploitation into products and services.” “Would there be sufficient ideas forthcoming?” Similarly, our ideas for creating a central administrative hub (of which we would be part) to guide the on-going work of the Consortium was rejected. The minutes recorded that “there was no enthusiasm for developing a central administrative hub”; “the Group felt that they were capable of running themselves.” So that was it! Charles and I ceased our
Biographies

As related here, it was Terry Trickett’s involvement with the Wellcome Trust as an architect and designer that led to the birth of Sci-Art. His company, Trickett Associates, had been formed in 1972 and from that time onwards he carried out numerous space planning and interior design projects for large organizations as well as acting in an advisory role when defining overall strategies for change and how these might impact on buildings. Another strand of activity was exhibition and display design with projects embracing museum displays, world touring exhibitions and trade shows. Now, Terry Trickett performs Visual Music worldwide at new media festivals and conferences.

In 1988, artist and curator Cynthia Pannucci, founded Art & Science Collaborations, Inc. (ASCI). Its work included New York City’s first Art & Technology Speaker Series (1993-1995), the world’s first Cyber Fair for Artists (1995) and, in 1998, the panel discussions Collectibility & the Digital Print and Bell Labs & the Origins of the Multimedia Artist. By 2002, ASCI has become an international hub for pioneering artists integrating art, science and technology via four ArtSci direct involvement in Sci-Art from that day on although, as I’ve already related, our work with NESTA continued.

**CP:** I can understand the skepticism of the UK’s Art’s organizations towards your notions for developing Sci-Art; the same would apply here. But, I think, if anything, you’re underplaying the overall impact that has been achieved not so much in advancing the concept of Sci-Art’s potential for generating products and services (where it’s the exceptions that prove the rule) but, more, towards Sci-Art’s part in producing new models of trans-disciplinarity. I remember this trend became evident at ASCI’s ArtSci’01 symposium where, for instance, ecological artist, Aviva Rahmani, explained her Ghost Nets – a project which, at the site of a former coastal town dump, she demonstrated that small points of carefully selected intervention might effect large systemic transformations. The result is not ‘art’ in the normal sense of the word but, more, an example of an artist acting as the public’s representative (a valuable service as pinpointed by Wellcome’s commissioned evaluation of Sci-Art).

**TT:** I agree, Cynthia, new values, attributable to both Art-Sci and Sci-Art, became apparent as both ventures continued. The ‘status’ of artists rose higher in the estimation of scientists and, conversely, scientists’ accessibility became more open in the estimation of artists – a key factor in enabling opportunities for trans-disciplinarity to emerge at the turn of the century. It became advantageous for scientists to bring an artist into their research teams because, to put it simply, funders perceived such a mix of professionals as having the capability of making the results of research more transparent and accessible to the public. In other words, George Steiner’s prediction that the arts and humanities would join scientific discovery in a spirit of partnership and sociability was beginning to be the norm rather than the exception.

But, now, Cynthia, to conclude our conversation on the Making of Sci-Art, I need to trace, briefly, what happened after the project’s high-flying first two years. For Charles and I, from the beginning, a guiding principle had been the conviction that the most fruitful developments in human thinking take place, more often than not, at those points were different lines of creativity meet. Sci-Art gave credence to this conviction; some of the submitted ideas were at the cutting edge with a few revealing that they had the capacity to become a powerful force for change and innovation. This was not an outcome that could have been foreseen when the Wellcome Trust took its leap into the dark; at that time, it had nothing to go on apart from the notions of a diverse group of individuals from the worlds of art and science and a sprinkling of generalists -“people drawn together by a common interest in subjects beyond their own immediate disciplines” as Ken Arnold described us. As outsiders, we brought free-ranging perspectives and new ways of thinking into the realms of a large organization (in 1995/96 Wellcome was still the most richly endowed charity worldwide) and, thereby, enabled Sci-Art to prosper. Today, there’s mounting evidence that better decisions are made, across all fields of activity, when they are free of the constraints of large company ‘group think’ – a fact that was tacitly acknowledged, as long as twenty years ago, by Wellcome’s Laurence Smaje, when he first listened to our views as outsiders and then acted on our advice. There’s no other way that Sci-Art could have happened. From my own point of
view, the first two years of Sci-Art activity were nothing short of miraculous. When artist friends of mine expressed a degree of incredulity at the extent of opportunities provided by Sci-Art: "How did you do that", they received the reply: "Well, it was easy; I just asked for it" but, it’s my recollections here that reveal the real story. Sci-Art required dedicated work by a team of people, insiders and outsiders, not only to add flesh to the idea but, also, to keep it alive for a period of time that far exceeded initial expectations.

The formation of the Consortium gave the Sci-Art initiative an assured further three years of funding. Throughout this period, the Wellcome Trust continued to play a key role not only as a partner but, also, by providing space and facilities for a newly appointed Sci-Art administrator, Bergit Arends. Established procedures were largely maintained with winning projects continuing to capture the public's imagination as evidenced by two books produced by the Wellcome Trust - first, in 2003, *Experiment: Conversations in art and science* and, secondly in 2004, *Talking back to science: Art, science and the personal* [11] [12]. Both are still available. The projects illustrated in the 2003 publication reveal a wealth of innovative ideas: an appreciation of cognitive behavioural techniques (called 'How to Live'); an illustrated review of the epidemiology of malaria in Kenya and Uganda; an account of organ music, concentrating on the low-frequency vibrations/sounds produced by 32 foot organ pipes (described by the authors as 'soundless music'); drawings and paintings by seriously disabled young people (entitled 'Navigating Memories'); a description of a 4-minute piece of music by the French composer Marais, inspired by the operation (endured by Pepys) of being cut to remove a bladder stone; and an introduction to the mathematics of juggling, called 'Baby Epsilons'.

About the publication, one reviewer commented: "it illustrates almost too well what one of the editors calls 'randomness in scientific method', leaving the reader with the impression that the 'Sciart' scheme will fund almost anything, however bizarre. But I would have to admit that the authors have given an account of some decent science which has also inspired some attractive art" [13]. Faint praise, perhaps, but the projects financed during the Consortium’s three year span did underline the scheme’s continuing ability to attract a high level of public and media interest – a factor which no doubt influenced the Wellcome Trust when it decided to reassume sole responsibility for sponsoring Sci-Art (or Sciart) for a further five years. In an earlier anecdote, I’ve expressed my personal delight at this unexpected outcome; from very small beginnings and a tentative request for 100K of finance Sci-Art had become a sustained and ‘exemplary’ example of sponsorship. It’s true, of course, that it never grew to embrace the ambitions that Charles and I placed on its shoulders but it did continue to produce a few projects that were capable of entering an onward cycle of creativity as demonstrated by my chosen ‘exemplars’. Sci-Art was a key player in a mission that has now developed a life of its own, with many spin-offs worldwide, which explains why, late in the day and before memories of its hard-fought inception fade forever, I have felt bound to put the record straight on how it all started.
References


