

REPORT

INSIGHT AND EXCHANGE:

An evaluation of the Wellcome
Trust's Sciart programme

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Insight and Exchange: An evaluation of the Wellcome Trust's Sciart programme

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Installation shot from *Tomorrow Belongs to Me*, by Jackie Donachie and Darren Monckton.
Photo: Paul Glinkowski

Executive summary

In 2007, the Wellcome Trust commissioned the Engine Room at the University of the Arts London to undertake an independent evaluation of the Trust's Sciart funding programme.

Running from 1996 to 2006, Sciart was originally launched to fund "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". Over the course of a decade its remit shifted and expanded to embrace a wider spectrum of arts and science activity. In total, Sciart supported 118 projects with nearly £3 million of funding to:

- stimulate interest and excitement in biomedical science among adults
- foster interdisciplinary and collaborative creative practice in the arts and science
- create a critical mass of artists looking at biomedical science and build capacity in this field.

Sciart was believed, anecdotally, to have supported the development of a unique community of arts practitioners, a new form of interdisciplinary practice and a body of contemporary artistic work relating to science, and to have had a significant influence on the public's engagement with science. The Sciart evaluation was commissioned to investigate, document and summarise the outcomes of the scheme and to seek evidence of its impacts.

The evaluation process included desk and archival research, primary data collected through 46 in-depth interviews and survey techniques, project and audience case studies, an audience exit survey and focus groups. In addition to a written report, a limited distribution DVD giving an overview of ten Sciart case study projects was produced. The report was launched at a conference, *Evaluating Sciart*, held at the Wellcome Trust on 5 June 2008.

A summary of the key findings is organised here around a series of types of 'capital'¹ for which evidence was found through an analysis of the scheme's ten years of grant giving.

Cultural capital

Whether it was a matter of timing or incentive, during the decade of Sciart there was a cultural shift, especially within the arts, towards more interdisciplinary practice. The burgeoning academic research culture of the visual arts in particular benefited from having Sciart as a context within which artists could develop projects. Through the contacts that it encouraged and enabled with the world of science, Sciart also helped to facilitate a tendency that was perceived to be taking place within the arts towards a more explicit 'social engagement'. The Sciart programme had enabled sometimes forgotten connections between the 'two cultures'² (art and science) to be recognised and accentuated. Both Sciart and the

¹ The sense in which 'capital' is intended here draws on the work of sociologist and cultural analyst Pierre Bourdieu. For Bourdieu, capital acts as a social relation within a system of exchange, and the term is extended "to all the goods material and symbolic, without distinction, that present themselves as rare and worthy of being sought after in a particular social formation" (Harker, 1990, p. 13).

² *The Two Cultures* was an influential Rede Lecture given in May 1959 by the novelist C P Snow, who was also a trained scientist. Snow argued that the 'two cultures' of modern society – the sciences and the humanities – were experiencing a breakdown in communications that was a hindrance to solving many of the problems facing the world. The lecture was subsequently published as *The Two Cultures and the Scientific Revolution*, and continues to be an important point of reference in discussions of the relationship between the arts and the sciences. It was referred to on a number of occasions during the Sciart evaluation interviews.

Wellcome Trust were seen as powerful and well-recognised brands. Partly as a result of this, individual Sciart projects were often very successful in attracting media coverage and wide exposure. However, there was a feeling that the potential overall for media coverage and cultural shift had not been fully exploited, particularly where projects that had received higher value awards were concerned.

Educational capital

The presentation of the outputs of Sciart projects, through events such as exhibitions, had had considerable educational value for their audiences. The presentations tended to be informative in themselves, often introducing new subject matter and ideas, but they also often involved a more formal educational component. There was a widespread view that artists' communicative abilities had helped to demystify and make more intelligible aspects of contemporary science. A high proportion of both artists and scientists had participated in educational activities associated with their Sciart-funded projects and the scheme had had a positive impact on perceptions of both artists and scientists as communicators and as educators. In this sense the 'two cultures' were shown to have the potential to coexist in a fruitful symbiotic relationship. Interestingly, the participating artists and scientists learnt much about one another's disciplines from their collaborations, but appeared generally not to have gained a high level of new insight into their own.

Innovative capital

As well as fostering innovative outputs, Sciart grants had resulted in the emergence of new processes of working, particularly in terms of artists' practice, and innovation of process was often felt to be as important as the resulting products. The smaller Sciart R&D grants, in particular, had succeeded in fostering experimentation and innovation. The flexible and non-prescriptive conditions associated with the administration of Sciart were valued as having directly contributed to greater levels of risk-taking and thus to innovation, and a perceived 'permission to fail' was seen as a strength of the Sciart scheme. A minority of interviewees felt, however, that the freedom to take risks had perhaps declined in Sciart's later years. It was suggested that artists were more likely to be innovative and to take risks than scientists, but that some scientists had become more open to risk-taking through their association with artists. A small minority of interviewees commented that while innovations had emerged from projects, these had often not been fully capitalised upon and, with further investment, could have led on to the development of products or processes with a wider application. The 'knowledge transfer' implied in this critique was not, however, an explicit aim or intention of the Sciart scheme.

Economic capital

The amount of money available through Sciart to support individual arts projects was seen by artists and arts promoters as quite substantial, and the scale of the funding offered (as compared with other arts grants schemes) had immediately encouraged a high volume of project submissions. The existence of Sciart funding had undoubtedly had a significant influence on the genesis and/or the development of many projects. Often Sciart R&D Awards had acted as seed funding, enabling the projects to develop to a point where other funders had been encouraged to invest in their continuance. The high value of Sciart Production Awards had enabled a greater than usual scale of ambition to be considered and realised by artists and arts producers, and had helped to militate against a sense of financial disparity that was perceived to exist between the arts and the sciences. Artists' career opportunities were often enhanced through participation in Sciart projects. However, there was also a strong sense that artists were often not adequately remunerated for their input into projects.

Aesthetic capital

High-quality aesthetic outcomes were found to have resulted from a significant proportion of the projects funded by the Sciart scheme. A review of the artistic outcomes of ten case study projects evidenced widespread dissemination to sizeable audiences, an unusual longevity of audience and professional interest, and positive media and critical review. The venues for display – which might be artistic, scientific, medical and/or historical – inevitably influenced the ‘aesthetic’ reception of the work. A significant minority of respondents (particularly from the arts sector) expressed concern about the instrumentalisation of the arts in the service of biomedical science, which the Trust was felt to have contributed to. Some artists were concerned that funding the arts for reasons that were not principally to do with the arts could have a detrimental impact on the general development of arts practice. Several interviewees referred to instances of what they described as ‘inauthentic’ arts projects that they felt had resulted from artists chasing Sciart funding.

Scientific capital

The communication of scientific research and ideas, and of general messages about the scientific profession, was felt to have been achieved by a significant number of Sciart-funded projects. It was not generally felt, however, that Sciart projects had contributed to a shift or development in scientific processes or outcomes. Sciart had helped to more closely connect the cultures of art and science, though this connection was perceived to have had greater benefits for the arts than for science. Scientists often commented that their involvement in Sciart projects had helped to generate a more reflexive awareness of the wider context for their work. A number of scientists also testified that their involvement with artists had encouraged them to adopt a more speculative approach to their research and as a result of participating in Sciart projects some scientists felt that they were more prepared to take risks. Working alongside the arts had helped to make science more accessible to the public, and had thus improved scientific communication. It was suggested that artists had, in some cases, helped to improve a perceived ‘image problem’ ascribed to scientists and to the scientific profession.

Ethical capital

Artists working on Sciart projects were felt to have acted as a proxy for the public, opening up scientific practices to a wider gaze. By bringing into the public domain new perspectives on the work that was being conducted in laboratories and other places of science, it was suggested that artists were, in effect, acting as the ‘public’s representative’. A significant aspect of the artists’ contribution to ‘public engagement with science’ was thus as independent scrutinisers – asking questions and provoking insights that might not otherwise be possible, either from the perspective of the general public or from within the scientific community itself.

Catalytic capital

There was a strong perception that Sciart had helped to remove the barriers to cross-disciplinary collaboration and had made it easier for more arts–science collaborations to happen in the future. This was partly because of the legacy of example that it had given rise to. There were reputational benefits both to artists and to scientists from having their activities funded by the Wellcome Trust. There was also clear evidence of Sciart being a catalyst for ongoing collaborations and innovations. Many of the new collaborations that had emerged during Sciart’s lifespan had been sustained well beyond the initial period of funding. It was clear that Sciart funding had incentivised a significant number of artists to orient their practice towards the sciences, perhaps for the first time. This was a mixed blessing as it was felt to have encouraged ‘inauthentic’ proposals from some artists. As well as fostering and incubating new collaborations between artists and scientists, Sciart funding had been the catalyst for many other new

relationships to develop: with arts promoters and arts venues, with colleagues and peers, and with public and professional audiences.

Personal capital

A number of personal gains were reported. A significant minority of the science interviewees reported that working with an artist had enabled them to rediscover a creative dimension that had, to some degree, been 'sacrificed' because of the professional protocols and conventions that were involved in being a scientist. Some of the scientists said that their participation in a Sciart project had represented a significant milestone that had had profound and positive effects on either their career development or their personal and professional sense of self. In some cases, scientists had become active collaborators in the artistic process, which had led to a personal sense of achievement. Artists had felt stimulated and challenged by the opportunity to work with scientists and within scientific contexts, and had often emerged from Sciart projects feeling more confident about their professional capabilities and standing.

Social capital

Many of those questioned felt that the lure of Sciart funding had provided a positive incentive and stimulus for artists to enter into exploratory discussions and more focused negotiations with scientists. Many of the professional and social relationships that began as science and art collaborations had continued after the Sciart funding had stopped. The Sciart scheme itself and the discursive events organised around it had provided a valuable meeting point, felt previously to have been lacking, around which a community of people with an interest in the science and art field were able to come together. A number of Sciart projects had provided opportunities for medical researchers and healthcare professionals to meet and converse with patients and representatives of patients' groups, which had led to new opportunities for mutual understanding.

Negative loss capital

It was clear from the case study interviews that virtually all of the projects in receipt of Sciart funding would have either struggled to proceed at all without Sciart support or been severely restricted in what they were able to deliver. Undoubtedly, an enormous capacity for generating new artwork and for fostering interdisciplinary collaboration would have been lost had the Sciart scheme not occurred. The evaluation showed that considerable innovations, new explorative processes and methods of working, and interesting outcomes had occurred that had attracted high levels of public and media interest. Many of these would not have been possible without some dedicated funding to sow the seeds of research and collaboration. While many people felt that, in its original guise, Sciart had served its purpose and had been appropriately wound down, there was felt still to be a vital need for an innovative and flexible funding scheme that would support artists and scientists to work together.

In summary, Sciart had generated a strong brand name and had enabled innovative, creative practice to flourish, often with high-quality outcomes. While some respondents pointed to areas where improvements could be made, the overall findings suggest that Sciart was an influential grants scheme that had achieved high-level impacts. It was generally agreed that those impacts were more pronounced in and on the field of the arts than the sciences.

Recommendations

In response to these findings, recommendations in five key areas have been identified and summarised. Below each set of recommendations is the Wellcome Trust's response to this guidance.

1. Budgets and finances

- The Trust should continue to support artists to work with scientists, scientific contexts and subjects.
- The Trust should continue to provide guidelines regarding rates of pay for artists, which should be promoted and adhered to.
- The Trust should continue to support lower-value grants to encourage early-stage speculative projects and emergent practitioners to enter the science–art field.
- The grants administration process should remain open and flexible to allow for innovation and risk-taking.
- Coordination between funding bodies could increase overall impact.

Wellcome Trust response

Building on the strengths of Sciart and continuing our investment in this area, we launched the Arts Awards in 2007 to fund arts projects that investigate biomedical science through collaborations with the scientific world. Since then, we have funded over 100 projects to a value of £3 million. In addition, with the opening of Wellcome Collection, a public exhibition and event space that explores medicine, life and art, we have strengthened our commitment to exploring the cross-disciplinary nature of the world of medicine and how science impacts on people's lives.

The Arts Awards scheme continues to fund early-stage projects through its smaller grants as well as production-based applications. Projects can apply for research and development funds to support the establishment of interdisciplinary collaborations and the development of experimental work. In fact, the criteria of the Arts Awards have been broadened to ensure that we encourage a range of innovative methods and new models of practice.

The programme was developed over a period of time in consultation with other funders in the area of arts and science, to ensure that our funding strategy supports complementary areas of artistic practice. We also aim to maintain and strengthen our links with other funding bodies to ensure that our work continues to be relevant and innovative. Many of our projects are part-funded with other organisations and where partnerships are appropriate we will work together to maximise impact.

In terms of fees, we continue to provide guidelines for this. Our committees are sensitive to this issue in their discussion of budget proposals.

2. Presentation, performance and public engagement

- A discretionary contingency fund could be used to extend the reach of projects that had proved their success.
- The Trust should consider how it can generate more awareness of, in particular, its higher-value awards, perhaps through an annual awards event or ceremony.

- Sciart is better known through a few isolated individual projects, rather than as a concerted body of work. The Trust should develop selected case studies to raise public and professional awareness of outcomes achieved by a wider range of Sciart-funded projects.
- Potentially receptive audience groups have not yet been introduced to Sciart-funded work. Such groups should be researched and strategies developed to encourage their attendance and participation.

Wellcome Trust response

The Arts Awards and other public engagement schemes now have extension funding available to grantholders that can be used to extend and maximise the impact of awarded projects. We are also investigating and piloting new initiatives for showcasing and extending successful projects. For example, between November 2009 and June 2010, a season of events around the theme of 'Identity' are being held across the country to complement Wellcome Collection's exhibition and events programme on the same subject. This season is made up of projects we have funded on this theme and aims to extend the impact of these projects and help them to reach new audiences.

Our website also features selected projects as case studies in its 'Achievements and impact' section. We hope to expand on the number of case studies published and will feature the studies from this evaluation on the website with this report. The redeveloped Wellcome Collection website includes examples of grant-funded activity that relate to the venue's themes in order to engage new online audiences.

3. Project management and quality monitoring

- The project managers of future science–arts schemes should capitalise on their knowledge of this niche field to play a proactive advisory role, where appropriate, in the development of projects.
- The project manager should coordinate and fund events that help to bring potentially interested participants and partners together.
- Project administration procedures should ensure that the monitoring and reporting requirements for lower-value grants are as light-touch as possible.
- Peer-review assessors of proposals should continue to be periodically rotated, or replaced, to ensure that the decision-making process does not stagnate.
- Quality-monitoring guidelines that encourage reflection on both process and outcomes should be developed for use by project partners.

Wellcome Trust response

In recent years, we have encouraged our funding teams to take an increasingly proactive 'grant-making' approach to our programmes both prior to application and after awards have been made.

Scheme advisers not only support applicants during the pre-application stage but also coordinate events and networks to encourage people interested in this area to collaborate, such as application workshops, grantholder days and themed seminar days. For example, our Creative Encounters project developed a number of events and resources for people working with young people on arts and science projects, which are now showcased on our website and through the Science Learning Centres portal.

All projects are assigned a project monitor from the start, whose role it is to advise the partners through the project. The emphasis of this role is on guidance and support rather than intensive monitoring.

Projects are required to submit a brief interim report and a comprehensive final report, which should detail the process undertaken and reflect on what worked and what could be improved. We also provide evaluation guidelines at application stage to help applicants plan how they will reflect on and evaluate the success of their project.

The Arts Awards scheme has a large and continually growing pool of reviewers who are experts in their fields. In addition, we research and contact new assessors where an application warrants it. Our committees are carefully selected and updated on an annual basis. We often use existing grantholders to review applications who have additional knowledge of the intricacies of making an arts and science project successful.

4. Partnership and collaboration

- Targeted dissemination to scientists and to scientific institutions of information exemplifying the benefits of working with artists should be considered.
- Targeted dissemination to scientists of information exemplifying the outcomes and processes involved in successful science–arts projects should be considered.
- Care should be taken at the proposal assessment stage to ensure that the principal project participants have the appropriate level of ownership of the project and have been involved in its planning.
- The Trust should play a more direct role in brokering partnerships.
- Previous grantholders could be assigned to inexperienced or higher-risk projects as mentors or ‘critical friends’.
- As well as encouraging collaboration between individual artists and scientists, the Trust should continue to support artists to work with scientific institutions, or subject matter. A liberal interpretation should be applied to the concept ‘biomedical science’.

Wellcome Trust response

We have a strong support network for our funded scientists through our Researcher Support programme, which provides training and professional development for scientists interested in taking part in public engagement activities. The support team can also help artists to find scientists working in a relevant area to their project. Arts Awards advisers in collaboration with the support team are currently investigating new approaches to encouraging scientists to become involved in arts projects, in addition to running existing events and brokering activities. We also hold grantholder events each year to help to develop an arts and science community whose members can support each other and help to develop new working relationships.

Genuine collaborative partnerships are part of the criteria by which applications are assessed. We request that all collaborators formally express their involvement in the project at application stage. The decision-making committee may also request that a mentor be assigned to the project if it is felt to be beneficial to the project.

5. Risk-taking and innovation

- The Trust should continue to encourage speculative R&D-type proposals, where applicants are not required to pre-define their project outcomes.
- Learning materials based on innovative Sciart projects should be developed for dissemination to training academies for artists and scientists.

Wellcome Trust response

The Arts Awards continue to provide support for R&D proposals to encourage new collaborations, experimentation and the development of new ideas.

As mentioned above, we hope to expand on developmental activities and resources that will support participants in developing new arts and science projects.

Introduction

In October 2007 the Wellcome Trust, a leading independent research-funding charity whose mission is “to foster and promote research with the aim of improving human and animal health”, commissioned the Engine Room (ER) at the University of the Arts London to undertake an impact evaluation of its Sciart funding programme. This ten-year scheme, launched in 1996 and concluded in 2006, originally aimed “to fund 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”. Over ten years, Sciart supported 118 projects with nearly £3 million of funding. The scheme passed through three distinct phases, the middle phase of which involved a consortium of influential funding partners from both the public and private sectors. The Trust felt that, as the final group of Sciart-funded projects reached their conclusion, the time was right to document the legacy of Sciart and to consider the long-term impact of the scheme, partly to help influence or guide the future strategy for the Trust’s new Arts Awards programme, which was launched in 2007.

Table 1: Total Sciart applications received and awards made, 1996–2006

No. of applications	No. of awards	Total awarded	Average award per project
1493	118	£2 795 280	£23 688

Sciart was believed, anecdotally, to have supported the development of a community of arts practitioners, a new form of interdisciplinary practice and a body of artistic work relating to science, and to have had a significant influence on the public’s engagement with science. This evaluation sets out to investigate, document (through a limited-distribution DVD produced as an element of the reporting) and summarise the salient outcomes of the scheme and to seek evidence of its impacts. A number of previous evaluations have been conducted that have made reference to the Sciart programme, some of which are commented upon within this report.

Guided by the wishes of the Trust and by the nature of the subject of its enquiry, this impact evaluation is predominantly qualitative and analytical in its methods, rather than quantitative and descriptive, and has a number of distinct foci, including:

- impacts on artistic practice
- the quality of artwork produced
- the impact of Sciart-funded projects on the scientists involved, and on their participation in public engagement activities
- impacts on the public’s opportunity to engage with Sciart-funded projects and, as a consequence of the scheme, to engage with scientific issues more broadly
- impacts on the practices and priorities of other organisations with an interest in the interface between science and the arts.

The evaluation has considered and reflects the full scope and history of Sciart, but the principal focus of its analysis is on the awards made in the final phase of the scheme in the period from 2003 to 2006.

The study proceeded in three phases. An initial phase of desk and archival research in October and November 2007, during which the methodology for the study was developed, was succeeded by a fieldwork phase, from December 2007 to March 2008, during which primary data were collected through a combination of face-to-face interviews and surveys. In the final phase of the evaluation, from April to June 2008, the data were analysed and a two-part report was prepared: this conventional text-based report and a 200-edition DVD that aimed to give an overview of the outputs of a limited number of Sciart case study projects selected from the final phase of the scheme (2003 to 2006). Both elements of the reporting were launched at a conference event, *Evaluating Sciart*, held at the Trust's headquarters in Euston Road, London, on 5 June 2008.

Chapter 1: Background and methodology

- This evaluation was commissioned to examine ten years of Sciart funding.
- Sciart supported 118 arts–science projects with nearly £3 million of awards.
- The Sciart scheme had three very distinct phases of evolution.
- This evaluation used case studies, interviews, surveys, audience tracking and focus groups to gather data.
- The data analysis focused on a series of predetermined as well as key emergent themes.
- The findings of several previous evaluations of Sciart had produced findings that are echoed in the current study.
- Sciart was superseded in 2007 by the Wellcome Trust’s Arts Awards scheme.

1.1 About Sciart

The Sciart scheme passed through three distinct phases. In phase one, two rounds of awards were made (see table 2).

Table 2: Awards made in Sciart phase one

Year	Number of awards made	Total value	Smallest award	Largest award
1997	6	£95 000	£12 500	£25 000
1998	6	£84 000	£12 000	£17 300

In this initial phase, the awards were focused solely on the visual arts and required a direct collaboration between an artist and a biomedical scientist. The awards were not advertised in 1999, when there was a hiatus while the outcomes of the first two rounds of funding were reflected upon and a second incarnation of Sciart was conceived. The amount of funding disbursed in the first phase of Sciart was £179 000 (6.4 per cent of the total given through the Sciart scheme as a whole).

In the two subsequent phases of the scheme, Sciart awards were given at two levels: **Research and Development (R&D) Awards** and **Production Awards**. R&D Awards (up to £15 000) supported the development, through collaboration, of initial project ideas or the delivery of small-scale productions across all art forms. Production Awards (up to £120 000 in the final phase of Sciart) were made to projects that aimed to make a significant impact on the public’s engagement with biomedical science. In 2004 a further category of small-scale award, **Experiment Awards**, was introduced, which ran for one year. Experiment Awards funded very early-stage or small-scale projects up to a value of £5000.

The middle phase of Sciart, which ran for three years from 2000 to 2002, involved a consortium of influential (mainly arts-focused) funding partners representing both the public and private sectors. The consortium comprised: the Arts Council of England (renamed Arts Council England in 2003), the Scottish Arts Council (a consortium member for the first year only), the British Council, the Calouste Gulbenkian Foundation, the National Endowment for Science, Technology and the Arts (NESTA), and the Trust. This broadened the scope of the scheme to cover all science disciplines and all art forms. Consortium partners contributed funds and had an input into the decision-making process. In 2002 the consortium was disbanded. Some of the partners – NESTA, the Arts Council of England and the Calouste Gulbenkian Foundation – continued to fund interdisciplinary practice involving the arts and sciences through their own funding programmes. During the Sciart consortium phase, awards worth £565 000 were made to a total of 35 projects (20.2 per cent of the total funding given through the Sciart scheme as a whole).

Table 3: Awards made in Sciart phase two

Year	Number of awards made	Total value	Number of R&D Awards made	Total value of R&D Awards	Number of Production Awards made	Total value of Production Awards
2000	11	£205 000	8	£85 000	3	£120 000
2001	13	£195 000	11	£95 000	2	£100 000
2002	11	£165 000	11	£165 000	0	–

Following the disbandment of the consortium, in 2003 Sciart became solely Trust-funded once more. The aims of the Sciart scheme in its latter phase were to:

- stimulate interest and excitement in biomedical science among adults
- foster interdisciplinary and collaborative creative practice in the arts and science
- create a critical mass of artists looking at biomedical science and build capacity in this field.

In the final four years of Sciart, 71 projects were funded to a total amount of £2 003 396 (73.4 per cent of the total funding awarded under the scheme as a whole).

Table 4: Awards made in Sciart phase three

Year	Number of awards made	Total value	Number of Experiment Awards	Experiment Awards total value	Number of R&D Awards	R&D Awards total value	Number of Production Awards	Production Awards total value
2003	14	£543 333	0	–	10	£148 000	4	£395 333
2004	31	£195 000	17	£81 600	10	£149 000	4	£386 700
2005	14	£472 773	0	–	11	£157 350	3	£315 383
2006	12	£369 990	0	–	9	£125 489	3	£244 501

The final phase of Sciart ran from 2003 to 2006, when it was discontinued. It was superseded in 2007 by the Trust's Arts Awards scheme, which continues to fund much of the same kind of activity that would have previously been eligible for Sciart funding.

1.2 Previous evaluations

Before proceeding to introduce the parameters and to discuss the findings of this current evaluation, it seems necessary to note that a number of previous evaluations have taken place that focused on either the Sciart scheme itself or else some of the projects that it has funded. A brief summary analysis will be offered here to explain the context for the most significant of these evaluations and to highlight some of their key findings.

The first evaluation of Sciart, *SCI~ART: An evaluation*, a self-initiated study of the first round of the scheme, was undertaken in 1998 by Dr Claire Cohen of the Division of Management Studies at Brunel University. This study had the support of (and was eventually published by) the Wellcome Trust, but the Trust did not commission or fund it. Its origins lay in Cohen's attendance at a conference in September 2007 to mark the end of the first year of Sciart, which stimulated, in the author's words, "my personal and professional interest in interdisciplinarity, the idea that people from different disciplines might work together towards some positive outcome."³ The aims and scope of the 1998 evaluation were deliberately open-ended; objectives for the study are not specifically stated in the report. Cohen hoped, through the application of "a qualitative rather than a quantitative" method, to shed light on "those areas of SCI-ART which escape the conventional categories of evaluation." Twenty-five interviews, "mostly face to face", were carried out: five with members of the Sciart awards committee, two with Trust staff, five with commentators on the arts or the sciences, six with unsuccessful Sciart applicants and seven with Sciart award holders.

A number of the salient findings to emerge from Cohen's 1998 report were commented upon in a 'Letter to the Reader' by Ken Arnold, the Trust's then Exhibitions Unit Manager (and the first de facto project manager of the Sciart scheme), which prefaced the published version of the report. It seems worth noting here that many of the points to which Arnold chooses to refer chime closely with opinions and perceptions volunteered by interviewees participating in this present study, which was carried out a decade later. For example, Cohen's study found that Sciart allowed project participants to "take a different look at things from that prescribed by their specific disciplines...enabling scientists and artists to explore viewpoints and methodologies outside those to which they were most accustomed".⁴ It also found that "the eagerness of both scientists and artists to meet each other is clearly not matched by the ease by which they can do so, nor yet by the ease and comfort they have in communicating with each other once they do". Cohen further commented on "the value of a midwife administrator to facilitate communication between the scientific and artistic components of a partnership", and observed that (particularly in terms of helping to publicise and disseminate project outcomes) "some successful projects felt that The Wellcome Trust did not do enough to support their winning projects".⁵ Each of the points highlighted here is echoed to some degree in the findings of this present report.

Cohen was also responsible for the next full evaluation of the Sciart scheme, *Sciart 2000: A report prepared for the Sciart Consortium*, which was published in June 2002. As its title suggests, this second report was commissioned by the partnership of funders who together presided over the second phase of the Sciart scheme. This evaluation was "intended as an analysis of and reflection upon the experiences of

³ Cohen (1998), p. 6.

⁴ Ibid., p. 3.

⁵ Ibid., p. 4.

sciart funded collaborations whose projects began in 2000”.⁶ Again, the objectives of the evaluation appear relatively open-ended and are not specifically stated in the report; and again the method favoured was qualitative, comprising interviews with 12 individuals representing five different funded projects. The interviews focused upon how projects were managed, how the collaborators interacted and the environment within which the projects were undertaken.

Some of the salient findings to emerge from the *Sciart 2000* report that, again, find an echo in the findings of this present study were: that interviewees felt that proposals for Sciart funding “should indicate the ‘conversations’ they intended to have with one another and should not tie the project to inflexible aims or processes”;⁷ that “collaborations were either composed of people who shared a passion from the start, or who were brought together for the sake of the project. There was some evidence that the former collaborations were more successful”; that the institutional environment in which projects took place could sometimes impose “barriers” that participants needed to “combat”; that effective project managers “could instil and maintain a high level of energy and interest” among the artists and scientists participating; that “demands of everyday” work could sometimes impinge on the ability of collaborators to input fully into the project; that collaborators sometimes “had difficulty in finding the best way forward for their project” and that a “hallmark of sciart projects is the sudden illumination, a surprising and often unpredictable moment of understanding and communication”, but that “such moments are few and far between”; that scientists and artists “often experience a changing view of each other’s skills and professions”; that an important “aspect of the collaborations was members’” fascination with each other, coupled with a desire to find a mode of communication that allowed the “free exchange of ideas”; and that “the sciart co-ordinator was perceived to offer sound guidance” and that important roles for the co-ordinator might include to help project participants “to learn from each other’s experience” and to offer “timely advice” and “encouragement”.

The *Sciart 2000* report concluded with a series of ‘Recommendations’, which might be summarised thus: the details of project management should be fully considered before the project begins; collaborators should consider the option to employ a professional project manager or consultant; the working environment and professional constraints that might impinge upon the project need to be carefully considered and planned for; in future, the Wellcome Trust might consider organising separate Sciart dissemination events for artists and for scientists; and the Trust could have a role to play as “a networking resource” in helping to link up and spread awareness about the various “art/science schemes” that had emerged, or were emerging, at that time.⁸

Concurrently with the Sciart 2000 evaluation, the Trust also undertook an internal audit of the scope of its activities and influence in the area of science–arts collaboration and promotion. Managed by the Trust’s Policy Unit, this study resulted in the report *Exhibitions Department Review: The ‘science and art’ field*, published in March 2002. The report aimed to provide an overview of the science–art field in the UK and a description of the role of the Trust within that field. It also aimed to consider the impact of science–art work on the science–art community and the impact of science–art exhibitions on their audiences. The report, which was not confined solely to a consideration of issues related to the Sciart scheme, brought together several distinct strands of research: an online survey of Trust science–art contacts; in-depth interviews

⁶ Cohen (2002), p. 3.

⁷ Ibid. Each of the findings summarised in this paragraph is highlighted in the report’s ‘Executive Summary’ on pp. 3–4.

⁸ Ibid. The ‘Recommendations’ summarised in this paragraph are detailed on pp. 27–28 of the report.

with science–art funders and arts administrators; a workshop involving the science–art community with a focus on evaluating science–art exhibitions and projects; and a study evaluating the impact of the Trust-funded ‘A Genomic Portrait’ at the National Portrait Gallery on its audience.

The principal findings of the 2002 report that seem to have most relevance to this present evaluation might be summarised as follows:

- Science–art was flourishing in the UK thanks, in part, to the interest and support of funders.
- Science–art’s identity as a field developed in the mid-1990s; most of the science–art community had been working in the field for under six years.
- The Trust’s science–art contacts were mainly in art; most were practising artists.
- Most science–art work was displayed in art galleries.
- The profile of science–art had been raised in the previous five years, particularly in the arts and the media.
- Science–art work was considered successful when the public were able to engage with it, when the collaboration was fulfilling to those involved, and when the work was of high quality.
- Funding levels and sources had remained constant, or had even increased in the last five years. This was seen as a strength of the science–art field in the UK, but larger and more long-term funding mechanisms were felt to be wanted.
- The Trust was perceived to be one of the most influential funders of the science–art area, particularly in encouraging new forms of collaboration and bringing new people in.
- The Trust was thought to have generated more interest in science–art among the artistic community than in the scientific community.
- The Trust was felt to have funded some of the most important science–art work produced in the UK and had encouraged other agencies to provide more funds for this type of work.
- There were calls for the Trust to expand its science–art programmes.
- Science–art collaboration can be difficult at times, and does not necessarily lead to high-quality work.
- Some felt that a too much poor-quality work had weakened the field. This often resulted from collaborations where the work was not equally strong artistically and scientifically.
- Those involved in producing science–art felt they had been positively affected by their involvement. Many had embarked on new forms of collaboration and had had their ideas about art and science challenged.
- It was widely believed that collaborations between scientists and artists had a positive impact on public engagement with art and science and on innovation in the two disciplines.
- There was a perception that science–art has had a greater impact on science than on art.
- In assessing the impact of science–art work on its audiences, the science–art community advocated a case study approach, where context-specific impact could be explored.

This current report is the outcome of the first detailed evaluation of Sciart to have been conducted since the two 2002 studies introduced above. It should be noted, however, that in 2003 a substantial publication, *Experiment: Conversations in art and science*, was published by the Trust. The aims of this publication, which presented seven projects – all funded during the consortium phase of Sciart – lay more in the domain of advocacy and promotion than of research and evaluation. Its purpose was described as “to lay

bare the collaborative research process...to intrigue and captivate through narratives that combine method and rigour with quirkiness and poetry”.⁹

Elements of the methodology used for the 2002 *Exhibitions Department Review* have been adapted for, or have otherwise influenced, this present study: six of the 12 individuals who were the subject of in-depth interviews were selected to be interviewed again for the report launched at the *Evaluating Sciart* conference; the online survey of Trust science–art contacts was repeated, albeit with a different selection and range of questions; and the ‘A Genomic Portrait’ study, described below in section 1.2.1, was a useful reference point in developing an approach to capturing information about the audience’s experience of an exhibition based on Sciart-funded work: *Faces of Battle*, at the National Army Museum.

1.2.1 Evaluations of audience reactions to arts–science exhibitions

The Wellcome Trust has commissioned several studies into audience reactions to Trust exhibitions that have featured art and science. While these are not specifically Sciart projects (though some of the exhibitions included Sciart-funded work), the findings of these studies – especially a major study undertaken by Morris Hargreaves McIntyre in 2008 – have relevance to Sciart projects and the Trust has requested that they should be considered as part of the Sciart evaluation.

Morris Hargreaves McIntyre conducted a series of four focus groups with both general and specialist audience groups. These reported that the exhibitions at Wellcome Collection, the Trust’s public venue, were thought-provoking and challenging. The main three outcomes of attending an exhibition, as expressed by visitors to Wellcome Collection, were enjoyment, learning something new and adopting different perspectives/thinking differently. The visitors suggested that the exhibitions were not what they had expected and they were surprised by the extent of the art included. A large percentage of visitors had returned to the exhibitions, bringing family or friends. One respondent commented: “I think the Wellcome exhibitions are amazing. I think there’s something for everyone. You don’t have to be like somebody who’s into science or medicine or art or history. Everybody will get something. It’s very stimulating.”¹⁰

The visitors seemed to be highly supportive of the combination of arts and sciences when seen in the context of Wellcome Collection. The Trust was identified as having pioneered the combination of arts and sciences and for some this had been an important part of the attraction to visit.

*I don’t think there’s anywhere that’s quite like the Wellcome Collection. I think it has quite a unique identity in this mixture of science and art.*¹¹

*Well the Wellcome Trust has been involved with art projects for many, many years and so they do have a...you know, a certain status and a reputation. Well that is how I came here, via their art exhibitions.*¹²

Can I say what attracted me to the centre in the first place? I think it was two things. One was the Wellcome Trust, because they were a big name and I know they they’re very wealthy and I was curious to see what

⁹ Arends and Thackara (2003), p. 10.

¹⁰ Morris Hargreaves Macintyre (2008), Overall Collection appendices, p. 7.

¹¹ Ibid., p. 14.

¹² Ibid., p. 14.

*they were doing. The other was the mixture of art and design which I think is an interesting mixture. I think it's really interesting to see projects where the two are collaborating.*¹³

While the focus group findings indicated strong support for the combination of arts and sciences, some of the respondents wondered about the motivation for bringing them together. It was inferred that the arts may only be included as a way to make the 'science' more outward-facing and to improve audience appeal and communication. While this method of outreach to the audience was generally regarded as favourable, some focus group respondents felt that the art could distract from the science content of the exhibition.

*I think it's probably a common denominator of all the exhibitions, that way they move between the artistic, the philosophical and the material culture of medical subjects and issues...it is probably its major strength, but also its major weakness for someone who's looking for specialised knowledge.*¹⁴

In the study, the visitors had identified two main purposes behind Wellcome Collection. The first reason was education, with over 37 comments relating to educational purposes, including increasing accessibility. The other reason was to demonstrate the link between arts and sciences, with 19 comments pointing to the link between the two disciplines. The summary report concludes: "This link is the absolute key attraction for visitors, so making sure this is communicated pre-visit in marketing is essential."¹⁵ Later in the report, visitor comments highlighted the positive link between artistic and scientific aspects, including:

A different way of looking at it all – not just science or art, but both combined in an interesting way.

Have an interest in both art and medicine and this place is fantastic for me.

It's very intelligently put together very clear mixed a lot of arts and science together covering a whole range of both a very broad collection, you can get an all-round knowledge.

*The way it gives you a new way of looking at stuff/combination of art and medicine and science.*¹⁶

The visitors felt that Wellcome Collection presents art and science in new ways: "It takes you beyond science into borderlands with art, ideas and so on."¹⁷ Some said that the balance between the science and the art content had been well struck and gave the exhibitions a wide appeal. For some, it was the art in the collection that seemed to take precedence over the science.

I: So finally if you were to explain the gallery to someone who hadn't been before and even someone else in the medical profession or someone maybe a random friend how would you say, I mean how would you describe it?

¹³ Ibid., p. 18.

¹⁴ Ibid., p. 12.

¹⁵ Morris Hargreaves Macintyre (2008), Qualitative research: exhibition and events attendees, January 2008, p. 8 (3.2).

¹⁶ Ibid., p. 16.

¹⁷ Ibid., p. 16.

R: I think I would call it an art gallery but I would call it lots of different attempts by artists to engage in science and interpret it and intriguing and make it accessible to the public in a way.¹⁸

This response could reflect the professional bias of the respondent. The Wellcome Collection evaluation analysed the background of visitors and found that, in terms of employment, a third of visitors have a professional or academic connection to health or medicine, and around a fifth are connected to the arts.¹⁹

In 2001 the Trust commissioned MORI (Market & Opinion Research International) to undertake a qualitative audience study of 'A Genomic Portrait'²⁰, exhibited at the National Portrait Gallery between 19 September 2001 and 10 February 2002, which the Trust had funded. In total, 73 face-to-face interviews were carried out with visitors as they exited the exhibition between 28 December 2001 and 3 January 2002. This research is an interesting counterpoint to the Morris Hargreaves McIntyre study as the project was within a recognised art gallery context and visitors would be likely to have artistic rather than scientific motivations for attending.

The majority found the exhibition interesting, and some very positive and enthusiastic reactions to the portrait were recorded, such as:

Very interesting, really fascinating. I do not really understand it. For my Fine Art degree I did work about genetic engineering – it's fascinating to see someone has taken it further.²¹

I thought it was quite marvellous actually, as it shows you are going into a new era.²²

A minority of visitors were negative about the portrait. Some were confused, while others simply did not consider it to be art. A few people did not feel that it made any impression on them, or could not see the point of the portrait.

I did think there was not all that much to it. It was rather underwhelming.²³

Very silly and a bit pretentious. I can't see the purpose of it. Can't see what it was trying to show me.²⁴

Around one-third of visitors felt that 'A Genomic Portrait' was not a valid piece of art. One of the main reasons given was that art should be more creative and not be so factual or literal.

It is not providing a human representation through imagination. It is showing something that is already true.²⁵

¹⁸ Ibid., p. 32.

¹⁹ Morris Hargreaves Macintyre (2008). Overall Collection report, Quarter 2: October–December 2007, p. 13.

²⁰ The portrait resulted from a unique collaboration between British artist Marc Quinn and Sir John Sulston, former Head of the Wellcome Trust Sanger Centre and a key figure in the development of the analysis of DNA and definition of the human genome. The resulting portrait, rendered from Sulston's DNA, raised provocative questions about the conceptual representation of the individual.

²¹ Hasler and Wade (2002), p. 3.

²² Ibid., p. 3.

²³ Ibid., p. 9.

²⁴ Ibid., p. 9.

²⁵ Ibid., p. 12.

Despite these negative comments, 86 per cent²⁶ of visitors to the exhibition thought that art had a role to play in challenging the way that science is viewed. Only a small proportion, around 5 per cent, felt that it did not have a role, with the remainder not expressing an opinion either way. The report showed that visitors thought that combining arts and sciences might raise the profile of science among a wider audience and explain complex scientific topics in a more accessible way.

The main reasons visitors gave for why art might be combined with science included:

- making science more accessible
- questioning scientific assumptions
- science and art are related and connected.

The MORI report concluded: “There will always be arguments over the validity of including an exhibition of this type in an art gallery, but there is no doubt that a larger proportion of visitors were in favour rather than against its inclusion. The results from this research suggest that visitors to the Exhibition believe that art can encourage people to think in more depth about scientific issues, and can make people look at them from a different perspective. It can help encourage people to develop their own opinions, based on how they interpret the subject matter, rather than just being fed information through potentially biased forms of communication.”²⁷

1.3 Information about the current evaluation

The overall aim of this current evaluation, as established by the Trust, was to achieve “an objective evaluation of the ten years of the Sciart programme to assess and document the impact and legacy of the funding and associated activities”.

In particular, the Trust wished the evaluation to meet the following aims:

Artistic practice

- Evaluate the impact on the arts community and artistic practice.
- Assess the quality of the artistic outcomes.

Scientists

- Assess the number of scientists involved in the Sciart programmes, what proportion of those would normally be involved with science public engagement and interdisciplinary practice, and which were new to this approach.
- Find out whether their involvement encouraged them to engage in more public engagement activities.
- Gain an understanding of the influence Sciart had on the scientists involved.

Audiences

- Evaluate the impact funded projects had on the public’s engagement with science, in terms of audience reach.

²⁶ Ibid., p. 13.

²⁷ Ibid., p. 17.

Other

- Research the influence the programme had on other professionals from each field, e.g. other funders, institutions.

A multi-part methodology was developed for the evaluation, which would be predominantly qualitative (based on the experiences, opinions and perceptions reported by interviewees, rather than on quantitative measures), and sufficiently flexible to respond to and accommodate the information volunteered by interviewees and survey participants. It was agreed that the original set of aims, which were quite complex and divergent, should be simplified so that evidence of outcomes and impact would be looked for in the following areas:

- on artistic practice
- on the scientists involved
- on collaborating partners
- on the public's engagement with Sciart projects and with science
- on the wider culture of and context for science–art collaboration.

These broad categories of impact are reflected in the headings that introduce each subsection of this report.

The study proceeded in three phases. An initial phase of desk and archival research in October and November 2007, during which the methodology for the study was developed, was succeeded by a fieldwork phase, from December 2007 to March 2008, during which primary data were collected through a combination of face-to-face interviews and surveys. In the final phase of the evaluation, from April to June 2008, the data were analysed and a two-part report was prepared: alongside this conventional text-based report, a 200-edition DVD was compiled to give an overview of the outputs of a limited number of Sciart case study projects selected from the final phase of the scheme (2003 to 2006).

During phase one of the evaluation, guided by the wishes of the Trust and by the nature of the subject of enquiry, a predominantly qualitative methodology was developed, which was to involve in-depth face-to-face audio-recorded interviews with 46 individuals, including artists, scientists, Sciart committee members, representatives of ex-Sciart consortium partners, and representatives of institutions and organisations that had played host to Sciart projects. Fourteen of these individuals were 'experts' occupying a range of different roles in the arts and sciences, who were considered to be particularly well qualified to comment on the scheme and its outcomes. Thirty-two of those interviewed had participated either as artists, as scientists or as third-party facilitators in the development or delivery of ten case study projects that had been selected at random, but within certain predefined criteria,²⁸ from the 71 projects funded during the

²⁸ The random sample of case studies was compiled with reference to the following indices:

Geography: A mix was achieved of London-based projects and projects in the rest of the UK.

Award type and amount: Four Production, four R&D and two Experiment Award-funded projects were selected (though one Experiment project had subsequently received R&D funding and one R&D project had subsequently received Production funding).

Award year: One project was funded in 2003, four were funded in 2004, five were funded in 2005.

Art form: Visual, performing, film and mixed-media arts were all represented in the sample.

Science area: The case studies covered a range of science subjects including the biological and neurological sciences, plant and animal as well as the human sciences, and issues to do with both the ethics and the history of science.

Three clear participants/contributors: To achieve a triangulated perspective on the project, one artist, one scientist and one third-party facilitator (usually an arts producer) were interviewed for each case study.

Limited previous profiling by the Trust: None of the case study projects had featured in previous Trust (or third-party) evaluations or advocacy publications.

final phase of Sciart (2003 to 2006). A multimedia record of these ten case study projects was collated in conjunction with the interview process to inform the production of the DVD, which represents an element of the overall reporting. Details of the individual case study projects are not included within this written report (they are included in the DVD and may become the basis for follow-up material for further dissemination).

To supplement the data gained through individual face-to-face interviews, a focus group event was organised that involved a mix of individuals, based in the arts, who had participated in or were known to have views about Sciart-funded projects. Additionally, an online survey was devised to capture information and feedback from a sizeable sample of both participants in, and unsuccessful applicants to, the Sciart scheme. The survey was sent out electronically to 298 individuals, and 95 responses were received. All the findings adduced from the data collected through the various research methods described have been anonymised for the purposes of this report. Where possible, the veracity of the information and opinion volunteered through interview and survey methods was verified by cross-referencing it with evidence already held by the Trust, such as that contained within existing self-evaluation forms and media reviews.

The initial desk and archival research phase showed that qualitative data regarding the audience experience of specific Sciart-funded projects was substantially lacking. To compensate for this and to provide a discrete case study focused on the audience experience, a mini-study was developed around an exhibition, *Faces of Battle*, that took place at the National Army Museum during the period of the Sciart evaluation. This exhibition had been made possible through a Sciart Production Award to the artist Paddy Hartley for a project initially called Project Façade. To help to put the audience-related findings of this Sciart evaluation into a broader perspective, the meta-analysis of audience research studies that had been conducted based on Wellcome Collection was also undertaken. The findings of these analyses are reported as an element of chapter 8, 'Sciart and the public'.

The analysis of the evaluation data was conducted around the central themes outlined above. In the reporting that follows, the broad themes that are listed there, along with several others that emerged through the process of data analysis, are organised under the following main headings:

- Sciart: context and funding.
- The scheme and its outcomes: Sciart strands and Sciart projects.
- The impact of Sciart on artists and on scientists.
- Collaboration: what happened when the 'two cultures' came together?
- Sciart and the public.
- The public's engagement with science through Sciart projects.
- Sciart's impact on the wider culture of art–science collaboration.
- Sciart and management.

The report concludes with a summary section that brings together: suggestions made by the participants in the study regarding how a Sciart successor scheme might extend or improve upon the original; an overview of the perceived strengths and weaknesses of Sciart; and a set of 'Authors' Recommendations', which it is hoped might usefully inform the design and development of future Wellcome Trust arts–science funding initiatives.

Chapter 2: Context and funding

- Sciart and the Wellcome Trust are both powerful, well-recognised brands.
- Sciart had helped to crystallise a nascent tendency towards interdisciplinary working.
- Sciart grants provided an effective financial stimulus for collaboration.
- The value of the funding, compared with other arts awards, contributed to the rapid emergence of a large number of science and arts projects.
- Sciart has been negatively associated with the instrumentalisation of the arts and with the ghettoisation of arts practices that deal with scientific subjects.
- Some interviewees questioned the extent to which Sciart had generated innovative, high-quality projects.
- Artists' remuneration for their participation in Sciart projects tended to be low relative to their input, mirroring a more general trend within the arts economy.

2.1 The context for Sciart

2.1.1 Reflecting the *Zeitgeist*

There was a clear view among interviewees that when it emerged in the mid-1990s the Sciart programme had managed successfully to concur with an emergent trend towards the breaking down of disciplinary boundaries, both within and across the arts and the sciences, and towards interdisciplinary working and collaboration. In launching the Sciart programme, the Trust was perceived to have recognised a niche that other funders at that time were not yet adequately addressing. It was felt to have both fulfilled a need and to have helped to stimulate further demand for funding to realise activity in this area of disciplinary crossover.

The great thing about Sciart was that it picked up on something that was already happening, that artists were beginning to go out and seek partnerships with scientists. Sciart either directly or indirectly responded to that. I don't think that any other organisation at that time was offering funding in the same way that Sciart was able to. It fulfilled a real function at that moment in time...

In the first year [1996] 200-plus projects came in immediately...Sciart caught the Zeitgeist at the right moment. The projects were already out there waiting to happen. These projects wouldn't have been realised without the incentive of the money...The development of a culture of science-art on a significant scale would not otherwise have happened at that time because the Arts Council wasn't interested in this area then, nor was the arts department at the British Council...Now, a lot more would be willing to fund this area of practice...

There is no doubt that Sciart focused attention on an area that had only been receiving piecemeal funding previously. It reflected a peak in interest in this area in the late 1990s and early 2000s, and its perceived

successes led to other arts funding bodies making money available for Sciart-type activities – collaborative projects with artists and experts from other areas, not just from the sciences – and I think that that can be attributed to Sciart.

Partly encouraged by the latest developments in technology and communications, a convergence of the 'two cultures' seemed to be in process. Sciart both caught the wave of this tendency and helped further to encourage it. In time, partly through the agency of the consortium of funding partners who came together in 2000 to launch the second phase of Sciart, a funding ecology grew up around this area of science and arts collaboration and activity wherein a wider variety of interests were able to be nurtured and supported.

It [Sciart] did lead to a perception that there needed to be more of an interaction between artists and scientists...But there is a convergence taking place anyway, with things like the web and people generally becoming more technology literate. There are a lot of people merging in a way where people don't really belong in either one field or the other...There is an increasing development of hybrid professional areas. The old C P Snow 'two cultures' argument is breaking down. Now, instead of a clear division between artists and scientists, there are 'geeks' and 'nerds' where you can't really define their activity as one thing or the other; it exists in a new space...We live in an age where the boundaries between science and art are becoming blurred...

I think this is now a worldwide movement. When the time is ripe for a change of attitude and of people's mindsets, it doesn't tend just to happen in one place...in New York Cynthia Pennucia was at the same time starting a thing called 'art-sci'...It was crystallising something that was in the Zeitgeist. We didn't really know that at the time, but when you look back after only ten years you can see that that is the truth.

2.2 The Sciart brand: "a little ripple across the UK"

Sciart was thought to have rapidly developed a powerful identity. For some interviewees, the pervasive brand recognition that was felt to have been achieved and the virtues and benefits associated with Sciart funding were seen as thoroughly positive attributes of the scheme, which may to some extent have been sacrificed with the winding-up of the Sciart programme.

[When the Sciart scheme was launched] the concept of science–art had not yet coalesced into a definable field of activity...Sciart now has 120 000 references on Google...

No one had heard of science and art in 1996; that term 'Sciart' exploded in the late 90s and has created a little ripple across the UK. Most artists now know about it and I would say that most scientists have heard of it now too, which is quite remarkable in a ten-year period...And most art galleries now would have shown some kind of science and art projects...

Sciart was such a good name. We want the public to have a greater understating of the connection between science and art and this was a scheme that genuinely tried to address that...

It is a shame that Sciart has discontinued...The scientists recognised it as a brand and an idea; that visibility and connection will be lost by just running it as an arts programme.

A number of interviewees expressed reservations about some of the associations that were perceived rapidly to have accrued to the label 'Sciart'. There was a sense that the brand had transcended its original function as the descriptor for a funding programme and had assumed much wider currency as a shorthand term (often incorrectly applied) to describe a genre of arts practice. The consequences of this

were often felt to be negative. The use of the label was felt, for example, to have contributed to an unhelpful or unfair ghettoisation of arts practices that were concerned in some way with the sciences.

There has been a tendency for Sciart work to be described as such within the visual arts constituency, and there is a sense that it occupies a certain area which is differentiated from the visual arts more generally, and it tends to get incorporated only in Sciart shows. 'Sciart' can be a limiting label for some work. There is now a ghetto that is described as 'Sciart', which is not necessarily a good thing. Once art is made it should function as art, without further labels...

One problem with Sciart is that it still tends to be ghettoised. The mainstream museum and gallery and arts commissioning sectors in the UK are slightly suspicious of the seemingly mechanistic content of what could be described as 'Sciart' projects. That is in many cases an erroneous view: that the visual arts are being used in the service of the sciences in some kind of illustrative capacity...

The concept of 'Sciart' is really present within a UK cultural funding context, but when you step outside of that narrow UK perspective you find that the same sorts of activities are taking place but it isn't labelled in the same way. People are doing the same sorts of things, but it is just 'art', not 'Sciart'. So it is a bit of a case of branding having gone mad. The notion of developing knowledge in new ways and of exploring new ways of communicating things is legitimate, but it shouldn't be constrained to just happening within a 'Sciart' definition.

For some artists and arts promoters the label 'Sciart' had also come to assume negative connotations linking it to an instrumentalisation of the arts in the service of biomedical science.

Sciart to me means, very specifically, the promotion of mainstream biomedical science using the vehicle of the arts...

I've tried to resist being labelled a 'Sciartist', but that has happened from time to time. The use of that label has entered into the lexicon and has become a shorthand for describing a certain type of work, often to do with PR for science.

Some artists and arts promoters perceived that the term Sciart unhelpfully implied a desire to merge art with science, thereby creating a hybrid or fusion of the two. The difficulty with this was that it might lead to a kind of compromise or dilution that could be detrimental to the integrity of both.

'Sciart': maybe that was a misleading word. You've got art and you've got science and they inform each other interestingly, but to aim to create something called 'Sciart' can sometimes lead to disappointing results...

'Sciart' is a bit of a difficult label...[it] sounds perhaps like a hybrid concept: it's not science, it's not art, it's 'Sciart', but what is 'Sciart'? It sounds like it could be pseudo-art or pseudo-science. I think that's the problem with the term. I see myself very much as an artist, and Y²⁹ very much as a scientist, and I see our collaboration as very much informing my understanding as an artist, and that scientific thought and research has an enormously valuable impact. I would hope that our collaboration would also enhance Y's work as a scientist. But the term 'Sciart' suggests that there is some kind of amalgam that is not quite one thing or the other.

²⁹ To preserve the anonymity of interviewees, 'X' is used within quotations as a replacement each time that an artist is referred to by name and 'Y' is used wherever a scientist is named.

For a few artists and arts promoters, the power and influence vested in the Sciart brand, had led to difficulties and misunderstandings in terms of the way that their own work had come to be understood.

When I say that I work in the territory of art and science, almost everyone says to me 'oh, you mean you do what the Wellcome Trust does'...Because the Wellcome Trust deals with the biomedical sciences only, 'Sciart' actually becomes a misleading label for the work which does not represent the full spectrum of the sciences...

[The Trust] have become like a rather large competitor; that is particularly challenging from a positioning point of view...They have inevitably monopolised what is now understood by 'science and art collaboration'. I feel so relieved that Sciart is no more, although of course that is not quite true as the label lives on; they have created a monster that will not die.

The predominant view among the interviewees was that 'Sciart' was a label that had served its purpose and that it was a good thing that the Trust had decided to develop a new identity for its arts funding programme.

Art that comes out of science—art collaborations should be regarded in exactly the same way as art that comes from other sources. It is too often seen as a particular brand, and I'm not sure that that is a good thing for the people who are making it...It was probably important at a particular moment that that should happen, but now it feels like a constraint on the way that the work can be regarded...

The word 'Sciart' is unhelpful; its etymology is entirely from this funding programme. No one used it before this programme existed...It is a bit of a red herring that doesn't really get you to the interesting thing around science and art collaborations. It has created individuals tailoring their practice around the availability of funding. It seems to me like it was the right time to stop Sciart. It had done its job and it had started to become an orthodoxy; a catch-all label, rather than something that was continuing to push things forward.

2.2.1 The Wellcome Trust brand: a valuable endorsement

A number of interviewees remarked upon the particular value of having the Trust name linked to Sciart funding. For some artists the association of the award with the Trust had helped to establish their credibility with scientists. Their testimonies revealed that some people within the arts community feel that considerable hurdles must be overcome in order for artists to gain entry into places where science takes place, and thereafter to be able to persuade scientists to collaborate on, and devote their time to, arts-related projects.

Scientists are so inaccessible to us in the arts profession. It starts with the big doors that you have to get through into the building, and then there are more and more doors to go through to get into the microscopic laboratories. And then there are the language barriers. You need a lot of time and a lot of financial backing to make it possible because people are very, very busy. Just with Arts Council backing you couldn't do it. You need the backing of someone with scientific credibility to persuade the scientists that it is worth it for them to give their time...

Because they are the Wellcome Trust that has in some ways made it much easier for artists to work with scientists, because of the status that the Wellcome Trust has in mainstream science. That status influences scientists infinitely more than the support of the Arts Council does because it's seen as a career advantage to a scientist to be Wellcome Trust-funded...It is the kudos associated with the Wellcome Trust money, rather than the money itself, that attracts them to Sciart projects...

Once the grant had been given, there was a kind of external permission for the scientists to get properly involved...the fact that the Wellcome Trust, which has a huge cachet in the world of science, was prepared to invest money into it was significant; that made the scientists think very seriously about their level of commitment.

2.3 The influence of Sciart funding

The amount of money available to support individual arts projects through the Sciart scheme was seen by arts practitioners (arts promoters, as well as artists) as being quite substantial.³⁰ It was clear from the interviews that the availability of this funding source, and the criteria associated with it, had had a significant influence on the genesis and/or the development of many projects. In some cases it had encouraged a degree of calculated opportunism. Some interviewees observed that the incentive of Sciart funding had on occasions led to marriages of convenience that had produced unedifying outcomes.

2.3.1 A stimulus for collaboration

A number of those questioned felt that the lure of Sciart funding had provided a positive incentive and stimulus for artists to enter into either exploratory discussions, or else more focused negotiations, with scientists.

If that funding wasn't available those collaborations with scientists probably wouldn't happen. Sciart has helped lots of interesting collaborations to occur in areas that wouldn't naturally think of collaborating. I think they saw each other as two scary worlds. Now I think some scientists are beginning to approach artists more naturally...

I began thinking of mechanisms through which we might work together, and the Wellcome Trust funding provided a focus; and that was the basis from which a collaboration began to develop...With the best intent, you try to work with people and the glue is never strong enough. This was an opportunity for commitment...

The key thing for her [an artist] was not the money but the fact that the 'call for ideas' enabled her to make the contacts with scientists...It gave her the opening and opportunity that she wanted.

Some artists commented on how Sciart funding had played a vital role in establishing a sense of parity in their working relationship with a scientist. It helped to ensure – in a way that might have been harder to achieve with funding solely from a dedicated arts funder – that both parties could feel empowered to commit to the project on equal terms.

Because there was funding available it meant that I wasn't asking Y to give his time for free. The Sciart award meant that we could pay a tiny proportion of Y's salary. Had that award not been available I would have been asking him to do it as a favour, so it was an empowering thing that meant that we were approaching it on equal terms...

If you look across the funding sector there are not many schemes that would support that kind of working partnership: where there is a sense that both parties are somehow equal. Most funding would support one side or the other...the Wellcome Trust as an organisation has a very particular standing within the science

³⁰ As a point of comparison with other funders, the average Arts Council England grant to individuals in 2005/06 (which corresponds to the final two years of the Sciart scheme) was £5580. During the same period the average Sciart award for R&D projects was around £14 000. Sciart Production Awards were considerably greater. (Source: Arts Council England website, www.artscouncil.org.uk/funding/gfta2006_individuals.php [accessed 2 May 2008].)

community; it is very well respected as a funder...it made more sense for us to go to a funding source like that rather than to go for purely arts-based funding.

The opportunism of some artists, who had developed projects specifically to apply for Sciart funding, was remarked upon by a number of interviewees.

If Sciart hadn't produced the money, this field of work wouldn't have taken off as it did...There was new money available for artists, and there is always a tendency to tune your proposals to whatever the money is available for...

The artists just want the money, and would go wherever they could to get it...More artists will certainly have developed science-focused projects simply because the Wellcome Trust money was there. And there was a huge distortion of arts projects specifically towards the biomedical sciences just because of the Sciart money...

In several instances, the artists themselves confirmed that projects, or specific elements of projects, had been tailored to the availability and conditions of the Sciart funding.

Initially, it was about tailoring a project to meet some funding. I was aware of the Sciart scheme, and then I started to think of a project I could do...I wouldn't have thought to work with a professor of biomedical science if I had not known about that fund. It was not an area that my work was in at that point...

We accommodated the bronchial element because we knew a lot of the original proposal...wasn't quite hitting the biomedical aspect that the Wellcome Trust is interested in. If we hadn't been aware of that biomedical element associated with Sciart we probably wouldn't have gone down the bronchial route, so to some extent that was a response to the funding requirements.

In some cases, both artists and arts producers remarked that what may at first have seemed a compromise or concession made in order to satisfy the funding criteria had in fact helped to enhance their projects.

At first it seemed to me to be a question of 'look, there's this money and quite a lot of it, how do we get it without me compromising my idea? How could I get these collaborators to work with me to tick their funding boxes?' But when I actually met with the [scientists], I realised that...they were this amazing resource in terms of enriching my research; and not just to authenticate the details. So, somewhere along the line, probably quite early on, it started to become a real collaboration that I was really comfortable with and had started to get a lot out of, which was not necessarily what I expected to happen...

The terms and conditions of the award didn't really influence the development of the project, apart from in one important way: that was in gaining the involvement of Y. We wouldn't have brought in a scientist if we didn't have to for the purposes of the funding. I don't think that it had an effect on the outcome at all but it did have an effect on the interpretation of the outcome and on its cultural context and relevance...His involvement brought an extra level of meaning and relevance to the project.

2.3.2 The necessity of funding

It became clear from the interviews that virtually all of the projects in receipt of Sciart funding would either have struggled to proceed without Sciart support or have been severely restricted in what they were able to deliver. A number of interviewees doubted that any other funder could have filled the funding gap.

It was quite a cash-hungry project and I'm sure that it would not have been able to take place without the Sciart funding. I was not aware of any other funding streams at the time that would have serviced that project...

We had already applied for other funding before Sciart and we didn't get that. We felt that we had pretty much exhausted other avenues, so I think we would pretty much have had to drop it...we would have been shafted really without that money.

In many instances, it was revealed that the element of the project that would have been sacrificed first in the event of a funding shortfall was the relationship with the scientist involved. In five out of the ten case study projects, the artists or arts producers involved said that if it had not been for the Sciart funding they would not have worked with their scientist collaborators.

We would not have had any money to have worked with Y...
(Artist)

We would probably have looked at the idea in a less elaborate way, and not worked with the scientists from the medical institute...
(Arts producer)

Several of the artists and arts producers who had received a sizeable Sciart Production Award commented on the unusual privilege of having so much money available to devote to one arts project. This had enabled a greater scale of ambition to be considered and realised, and had helped artists to establish a greater sense of credibility with their science-based collaborators.

[The Sciart award] was a significant sum of money. The opportunity for us to have that kind of money for a project would be fairly rare. To have three people working together to make new work was a very exciting prospect for us; it was a triply creative process. That is not the kind of thing that can happen very often...

It was unusual and quite daring because it gave a substantial amount of money, which is unusual in the arts. In the sciences they are always talking of projects in the hundreds of thousands, and this fund gives artists the professional resources and institutional backing to approach scientists and to be taken seriously by them.

2.3.3 Funding-led distortion

A number of interviewees from the arts community held a strong view that because the criteria for the Sciart scheme were explicitly linked to the promotion of the biomedical sciences, this would inevitably influence artistic practice to develop in a direction that was not necessarily driven by purely artistic motivations. For this reason, the Trust was seen to be a potentially distorting – as well as a positively enabling – influence on arts practice, more so perhaps than other funders of the arts, such as Arts Council England.

One of the reasons for Sciart was 'the public engagement of science' angle, and some of the projects inevitably were more PR than they could be said to be artworks...

More than ACE, the Wellcome Trust has prompted artists to do projects that they wouldn't otherwise have done, and I don't mean that in an entirely positive way. There seems to have been a lot of opportunism around the scheme...I don't think it is the strongest way for the contemporary arts world to progress. Artists can lead the market and artists can lead the ACE, but they can never lead the Wellcome Trust. That's because the Wellcome Trust's priorities are written into their constitution, which is nothing to do with the arts.

So, their interest is completely defined in terms of an instrumental use of the arts: to promote the public understanding of biomedical science.

Some artists were concerned that funding the arts for reasons that were not primarily aesthetic could have a detrimental impact on the general development of arts practice.

The 'tool for communication' model of Sciart collaboration is, I think, quite problematic. There seem to be artists around who have found this a useful way of developing the profile of their practice, and good luck to them, but I'm not sure that it has really developed the world of art in the way that you might have hoped for...

In some ways you think 'should it be like this? Should science take over the arts in that way and dominate the artistic culture and practice?' Will we look back at this period and think 'how come? Why are artists doing science-oriented projects? In what way does that actually shape art practice?'

A minority of artists and arts promoters expressed the view that the Trust's science-oriented organisational mission made it impossible for it to function as a disinterested or benign force for arts development.

The Wellcome Trust can make no real contribution to the arts because they are constitutionally unable to adopt a strategic view of arts development. It is very frustrating, because they have such huge resources to draw upon that they could do a lot if they were able to support art for art's sake...I wish that the Wellcome Trust could be more strategic in how it thinks about the arts, but I understand that it is not able to do that...

If they were to do things better, they would need to be more sensitive to the needs of the arts, but their mission prohibits them from doing that. That is a contradiction that is insoluble...The art is no more than a secondary accessory of science.

Associated with the perception that Sciart had a prescriptive focus on the biomedical sciences was a view shared by a number of artists and arts promoters that, compared to other funders of the arts, the very specific criteria attached to the Sciart scheme made it very difficult, or else off-putting, for many in the arts world to consider making an application.

A lot of people are put off applying because they see it as something incredibly specific. I'd never thought about applying before, because it has such a tight remit. And a lot of the work seemed to me to be just scientific illustration in a lot of cases. Things like animations looking at different psychological states and stuff struck me as not at all interesting from an artistic point of view...

As a curator-producer I am always trying to match contemporary cultural concerns with an artist, and with a pot of money, and with an audience. A lot of curators find it really difficult to hit that biomedical definition on the nose. And the Wellcome Trust shouldn't underestimate that.

Several interviewees referred to instances of what they suggested were 'inauthentic' arts projects, which they felt had resulted from artists chasing Sciart funding. A number of arts promoters who had worked on what they considered to be successful Sciart-funded projects testified to a scepticism regarding some other projects that Sciart had supported, on the basis that the lure of the Sciart funding had brought forth projects that they believed did not well serve the interests of art.

The Sciart field does bring up some of the worst examples of ill-considered collaborations at times. A lot of people in the art world have great misgivings about some of the projects...[They] give an impression of engaging with an artistic sensibility when really they are not; they are painting the stripes on the side of a car, or making fluffy paintings of cancer cells. Those sorts of projects don't serve the interests of art at all...

I had seen a lot of Sciart-branded projects that I thought had failed on the art front; where you ended up with a Frankenstein's monster. That seemed to happen where the ideas weren't translated into a successful artistic outcome. It felt like people had received money for its own sake, rather than because the ideas were embedded within their artistic practice; and the end projects were shallow and unresolved.

2.4 The economics of Sciart projects

A number of issues were raised by interviewees regarding the economics of Sciart-funded projects. One of the most significant concerned the perceived differential between the respective funding environments of the arts and the sciences.

2.4.1 Artists' remuneration

Of pre-eminent concern to several commentators was the issue of the comparative remuneration of the artists and the scientists who had worked on collaborative projects. There was a concern that Sciart may have helped to perpetuate the general economic situation faced by artists in the UK; relative to other similarly qualified professionals, including scientists, they tend to be poorly rewarded for their work.³¹

The economic dynamic that was prevalent in society, in which there was an expectation that artists would work for next to nothing, was in danger of being replicated through the scheme. The artists could end up working for no money at all because the budget just went on the nuts and bolts of realising the projects. Eventually we did recommend a day rate for participants to consider, but I'm not sure how rigorously those guideless were followed. I remember the unevenness of budgets, with some artists not paying themselves at all, and others charging Arts Council recommended day rates...There were a few bids where the rates were equal for all partners, but they were very few...I think there should be clearer guidelines established on this issue, not least because an acceptance of the principle of equal payment for work done would help to establish that a genuine interest was being evidenced by all collaborators...

It often ends up with the artists working for virtually nothing. In that sense Sciart, even though there are comparatively large amounts of money involved from an arts perspective, contributes to the culture where artists are subsidising their own work.

At least two of the ten case study projects analysed for the evaluation seemed to provide evidence to substantiate this concern.

X's fee [for realising a complex and highly regarded Sciart project] was only about £500...She is heavily subsidising her practice by doing corporate work...

The proportion of the budget that went to X as a fee was tiny; that was partly through her choice. In the arts business we are used to delivering very very well on tiny sums of money.

³¹ A report into 'artists' labour markets' published by Arts Council England in 2002, for example, found that: "National, regional and local studies have confirmed the precarious nature of employment in the sector and the relatively modest financial rewards obtained by those who work in it...The sector is seen as a major contributor to social and community development, yet those starting and building a career in artistic occupations are still highly dependent on having financial support from their families." (Galloway *et al.*, 2002, p. 13)

On a more positive economic note, some modest commercial exploitation had been possible in the case of at least two of the ten case study projects. This had either contributed to the remuneration of the arts workers or else provided funds that could be used to support further arts activity.

[The work] was editioned, and two or three of the editions have been sold. That has provided some income...and that all gets ploughed back into other artists' projects.

The differential in the general funding situation obtaining in the arts as compared with the sciences was remarked upon by a number of commentators. This was felt to have possible consequences in terms of the relative seriousness with which Sciart projects might be regarded by the respective partners involved, and could have an impact on the levels of commitment shown.

For a scientist £30 000 or £50 000 is peanuts. For artists the Wellcome Trust money is a living...Because of that mismatch it tends to mean that the artists would come over to the lab and get the information...They tend to go to the lab; it is rarer for scientists to go to the artists' studios. That tends to make the collaboration more on- way; it implies that the interest and knowledge exchange is in one direction...

The average amount of money that a scientist in my department might get in a year would be between £30 000 and £80 000 from grant income to carry out their science. You compare that to a £10 000 project for Sciart. So, money is a smaller incentive for the scientists in terms of the time involved. Their efforts will necessarily be focused on higher-value projects that might be happening at the same time...

Y did at one point say that 'this is a big grant to you, but in terms of scientific research it is an absolute drop in the ocean'.

Artists participating in the evaluation focus group also remarked that the level of grant given to Sciart projects was insufficient to allow for the artists to derive a reasonable fee for their input:

The finance support was not enough. The percent of money given for projects for arts and culture from the Wellcome Trust is so small compared to the percent for science. Artists had to work for nothing. The Wellcome Trust has been made aware of this problem.

2.4.2 'Full Economic Costing' and value added

One economic-related issue that arose in interviews with organisations based within the academic sector was the increasing prevalence of the principle of 'Full Economic Costing' (FEC) within UK higher education. Cultural venues operating within this sector had to a degree managed to circumvent the growing culture of FEC during their period of Sciart funding, but there was a sense that the situation was now beginning to change and that this might have future consequences for projects funded by a scheme such as Sciart.

Academic departments, particularly science-based departments, are rapacious in their overheads for Full Economic Costing. We have a different remit, and...it was not set up like a university research grant would be. Now, questions would be asked that three or four years ago would not have been asked about how the budget would work, because of the increasing emphasis on Full Economic Costing. Really it was done a bit on the fly...When universities begin to operate like universities do, it can suck the lifeblood out of the funding. So there are some real issues for the Wellcome Trust to consider there.

Where a project had been unable fully to capitalise on the discursive dissemination potential of its outcomes the point was made that a failure to apply FEC principles at the application stage had led to a shortage of resources to apportion to this area. This was one of several instances where the issue of FEC arose; in each case it was implied that this was an issue that the Trust should take account of in preparing the guidelines for future funding.

Perhaps our failure was to do with not achieving the FEC to deliver at a higher level. We don't tend to do that sort of costing in the arts.

The evidence gathered during the survey and focus group pointed to the fact that Sciart projects had often generated considerable added value, which ought to be acknowledged. In a number of cases the amount of direct funding received was relatively small, but other resources were added as 'in kind' or actual contributions to the projects. For example, universities gave sabbatical leave, both scientists and artists gave considerable unpaid time, and institutes from both the arts and sciences field gave extra resources and free use of technology. Much value was added by the fact that scientists often possessed equipment and expertise not generally available to artists. As one respondent noted: "I think the Wellcome Trust get real value for money."

Chapter 3: The scheme and its outcomes: Sciart strands and projects

- **The flexible and non-prescriptive conditions associated with Sciart were valued and had directly contributed to risk-taking and innovation.**
- **Research and Development Awards, in particular, had led to innovation in processes and outputs.**
- **Research and Development Awards had also produced high-level impact for relatively small amounts of money.**
- **By external measures, the majority of case study projects had resulted in high-quality outputs.**

3.1 R&D, Production and Experiment

Apart from during the first two rounds of Sciart in 1997 and 1998, where the spectrum of awards was relatively narrow (ranging from £12 500 to £25 000), a notable financial differentiation was made within the scheme between R&D Awards and Production Awards. The first category of award targeted projects that were more exploratory in nature and tended to emphasise the value of the process of collaboration and/or experimentation over the delivery of polished public outcomes; the second category aimed to support projects that were already at an advanced stage of development and were expected to result in high-profile outcomes. R&D Awards were typically £10 000 during the three years of the Sciart consortium phase (2000 to 2002), rising to £15 000 in the final four years of the scheme (2003 to 2006) when it was managed again solely by the Wellcome Trust. Production Awards were in the region of £40 000 to £50 000 during the consortium years, rising to around £100 000 when the scheme became autonomous. For one year only, 2004, a further category of award, Experiment, was introduced. This aimed to support the research and development of very early-stage experimental projects and awards were offered at a lower level of £5000.

The interviewees generally felt that the tiered approach to grant-giving was a good one, encouraging and enabling projects to develop at different levels of ambition, and allowing for some projects to progress from exploratory beginnings through to large-scale, full realisation.

The framework of the Sciart scheme, which allowed a spectrum of awards, from £5000 to 15 000 up to 100 000 for Production, does dictate that a range of things will emerge. It is a healthy spectrum that it encourages. The upper end is a very high level in terms of arts funding. It is possibly unique, and that can either enable a very-long-term project involving lots of different collaborators, or else a complex project with very high production values can benefit...The staged funding structure led to a quite interesting progression...There were some like Jackie Donachie and Darren Monckton who were able to graduate from R&D to full Production.

3.1.1 R&D: the real Sciart success story?

There was a strong view among the interviewees that Sciart had been most successful through its support for R&D. The large financial differential between R&D Awards and Production Awards was commented on by some, who tended to feel that it was perhaps too pronounced.

The scheme might have been more successful in its R&D aspect than its Production aspect. Some of the early process-driven activity was more successful than the goal-oriented activity...

The divide between R&D and Production was way too big. The gulf between £15 000 and £100 000 was massive. Even so, much of the R&D work had public outcomes that were far in advance of the scale of the grant. Artists can be very productive with very few funds...A lot of the R&D grants simply encouraged a much more detailed dialogue between the artists and the scientists. So, the R&D grants were the real success story of Sciart.

It was pointed out that, with very few Production Awards on offer each year – typically three or four compared with ten or eleven for R&D during the last four years of the scheme – the prospect of securing Sciart funding to progress from early-phase development work to production was quite limited. This had only happened on a handful of occasions throughout the full lifespan of Sciart. Even if full production could not follow, however, it was felt that the investment made in researching and developing ideas was still worthwhile as it would typically feed into developments within an artist's (and possibly also a scientist's) practice and/or thinking at a later date.

A lot of successful R&D-funded projects came back for Production grants, but we were able to fund very few...[but] with or without Production funding those experiences will have fed back into the artists' activities in their studios, and their projects would have had a pretty long tail. Those activities didn't just end when the project funds ran out, so there was a legacy over and above the public-facing projects that took place during the funded activity.

The interviewees were aware that many of the projects funded to undertake R&D had nonetheless produced substantial and significant outcomes. This perception was confirmed by the case study analysis of ten projects in which it was found that four out of the six projects that had received support for R&D had produced public outcomes during the R&D phase. These included two projects that were funded under the Experiment category that, although awarded just £5000 each, had both resulted in highly successful outcomes, judged by the criteria of demand to display the work, number of places shown, calibre of venues shown in, and critical and curatorial interest in and approval of the work.

Even the R&D-funded projects ended up, often, with fully fledged pieces of art work. Sometimes that was enabled by further funding from other sources, but sometimes there were very quick returns on the original funding. Some of the more modest projects were the most successful: 'blue skies' projects but within a very defined area of study. Alexa Wright's 'Phantom Limb'...was an example of a modest project that had a huge impact...

Some projects based on obscure proposals can also lead to really successful finished outcomes. An example would be Daria Martin's 'Soft Materials', which produced a really brilliant piece of work that helped to shift the idea of what contemporary art could be and what contemporary dance could be, but working at the same time with scientists who were also working at the cutting edge of their practice. Once a project gets funding from this scheme it can help other funding to latch on to it, and that is what happened here, where

the initial funding from Wellcome Trust was only £5000. This project indicates the power of Sciart to really seed and stimulate important ideas.

A number of interviewees commented positively on the fact that implicit in the two categories of Sciart award that offered research and development funding (R&D and Experiment) was an acknowledgement that projects should not necessarily be expected to proceed to a full realisation of public outcomes. These strands of the scheme appeared to recognise that there was value simply in the exploratory process itself, and that ideas that may look very promising on paper may not stand up when put to the test.

It [Sciart] was important in that R&D allowed some people to recognise the limits of a potential idea and to choose not to take it on to further development at that point. I think that is a valuable outcome in a way. If you want to enter a collaboration that is inherently risky and becomes more complex the greater the value of the commitment, funding at an initial stage of development will allow that process to be investigated early on, without necessarily implying high-level expectations, and funding requirements...

It is perfectly possible to have great ideas and great dialogue but also to produce bad art. The luxury of an incubation period allows you to assess what is going to work and what is not going to work early enough in the process either to pass on something or to be able to transform it.

3.1.2 The virtues of Experiment: freedom to play without pressure

Although it was only a very short-lived category of award, the artists who had initiated the three case study projects that had received Experiment funding (including one that subsequently went on to secure a further award for R&D) were very clear about its attractions and its benefits. The open-ended nature of the Experiment strand and the fact that it did not require applicants to predetermine an outcome were particularly valued by artists. In each of the three case study projects funded under this category, rapid and productive progress had been made, leading to exhibition outcomes during the funding term. The artist who had gone on to secure a further R&D Award reported that progress had been achieved more rapidly during the period of Experiment funding than during the R&D-funded period.

Experiment was the most open category of Sciart award, and the open-ended nature of it was particularly appealing. It wasn't articulated in terms of wanting to over-prescribe the outcome, which is often the problem with other funding schemes...

[Experiment] seemed a very available, accessible pot of money, and they were very supportive of the experimental approach. Lots of funding streams require you to state your outputs and your target audiences up front, but this one just allowed you free rein to experiment...

The first [Experiment-funded] phase was very good because it was very experimental and I produced tangible products quite fast...I basically allowed myself to play and to try out new techniques that I hadn't worked with before. I hadn't filmed before, and I hadn't been a producer of animation before, so I experimented with different artistic techniques.

In addition to the artists, the promoters and curators who became involved in projects funded through the Experiment strand felt that it was perhaps unique among funding sources in being open-ended, and that with its demise it would be difficult now easily to find an alternative source of funding for the kind of highly speculative activity that the Experiment Awards had supported.

If we had had to go somewhere else the project could have been very different; other funding streams may have been more prescriptive in terms of us having to say exactly what would come out of it even before we had started. The terms of the Experiment scheme made me confident that I was providing a good context for something interesting to emerge...the funding allowed us to go ahead as we thought best...

I'm not sure how easy it would now be to get £5000 for that project on the basis of such an open application. I have a feeling that the climate for funding is now more restrictive. It seems that the Wellcome Trust has moved more towards the public engagement side of things, and promoting biomedical research has become more prominent than perhaps it once was in relation to the arts side.

3.1.3 The benefits of R&D for artists and producers: “manna from heaven”

Some artists who had received R&D funding reported similar benefits associated with that strand of Sciart. Although the sums of money involved were higher (typically £15 000 in the later years of the scheme), it was perceived that artists and scientists were given licence to experiment quite freely, without the pressure to produce specific, pre-described outcomes.

The thing that was fantastic about the research award is that you didn't have to say what you were going to do. They actively seemed to encourage us not to know at that point. We didn't know a lot about each other when we went into it. But it was very good that it was 'blue skies'; it was about us spending time together and bringing ideas up, which is what research should be.

Interviewees whose expertise lay in facilitating the production of arts projects testified to the benefits of being able to work with projects that had already had funding to enable R&D work to take place. A perceived problem with some arts projects was that the dictates of the funding, and the amounts involved, could often lead the artists to rush through the development phase and on into production. The Sciart R&D Awards had provided an opportunity for more forethought and reflection than was often the case, and this was felt to have given ideas the opportunity to mature before they were taken to full realisation.

It is good to find a project where the artist has kind of got the research out of the way, and almost out of their system, and is ready to go...Research is a crucial part of every project, and if you don't do it at the beginning you end up researching and producing at the same time. X is in the enviable position of being well supported enough at the beginning to have got through that phase with a real sense of what she wants to do with the project; and that for us as a production agency is manna from heaven...

It is of benefit to us that his project emerged more fully formed; that it emerged from a period of gestation and is ready to run...having time to rid yourself of ideas that are extraneous and to have the opportunity to have your ideas validated by someone looking at them from a different angle with a scientific attitude can only be good.

One artist involved in a project that had secured a Sciart Production Award seemed to corroborate this latter perception when he observed that, on reflection, a period of prior R&D would have benefited his project, particularly in terms of laying more solid foundations for the scientific component.

R&D funding would have been really useful, because we could have spent more time researching and identifying the collaborators. It could have put the foundations in place for a more thorough scientific relationship. That was really our mistake. We had to go for production at the time we applied, because the project was already so far advanced in terms of the development of the work and the organisation of the tour schedule. So there just wasn't the timeframe then to allow for proper R&D.

It was also suggested that proper investment in R&D at an early stage could reap benefits in terms of efficiency and cost-effectiveness in the longer term.

I feel that R&D is hugely valuable and hugely cost-effective in the way that it takes waste and misunderstanding out of the equation further down the line and it allows you to budget and to frame the project more effectively before it goes into production.

3.1.4 The benefits of Production funding: supporting large-scale ambition

A common view among the artists and arts producers who had received Production funding was that they had benefited enormously from being able to work towards – and achieve – a scale of ambition that was rarely possible with the levels of funding usually available for arts projects.

It had the scale and impact that it did because of the funding. £100 000 is a really significant award for an organisation like us. It allowed us to scope out the complete scale of the project...

The aim was to produce a transformative and spectacular multimedia installation. We wanted it to be an experience that would be magical for the individual spectator. In terms of the subject matter it was comparable to what I had aspired to before, but what was different was the scale. I've not done anything on a comparable scale, either before or since.

It was notable that even at the higher level of funding, artists commented positively on the flexibility of the conditions attached to the award. This allowed for modification within the project and this ability to be more risk-taking and responsive was highly valued. This flexibility was seen to be a distinctive feature of Sciart funding.

The beauty of having this funding was that it allowed us to put money aside to make work that we hadn't already defined...It allowed us to think more ambitiously and fluidly about what we wanted to do, and that is quite an amazing privilege...To have a pot of money that you can call on to make work over a three-year time span that is actually very unbureaucratic in its requirements is a fantastic way to work as an artist. It means you can make work within weeks of having an idea. I can't think of another situation in which you would be able to do that, unless you have the support of a major private gallery.

One potential downside associated with the scale of projects enabled with Production funding was the demand it could place on artists and producers who were unaccustomed to working at this level of ambition. Although the case study projects examined seemed to have risen to the challenge, it suggests that organisational capacity ought to be a consideration in the decision-making process leading to Production-scale awards.

The scale of the project was enormous, and that did have quite an impact on the organisation; it was hugely time-consuming, and it made us fall very behind on other things.

3.2 The quality of Sciart-funded projects

As will also be discussed in chapter 8, 'Sciart and the public', the case study projects provided a wealth of evidence to suggest that high-quality outcomes resulted from a significant proportion of the activity funded by the Sciart scheme. Indicators of quality derived from and observed in this random sample of ten projects included:

- unsolicited invitations to tour or present Sciart-funded work beyond the initial venue or place of presentation (at least five projects)
- nominations for arts industry awards (at least one project)
- selection of work for inclusion in a prestigious exhibition “defining current trends and new directions in contemporary British art” (at least one project)
- invitations to show or present the Sciart-funded work at venues outside of the UK (at least six projects)
- serious and positive critical review in the arts press or art journals (at least three projects)
- testimony from professional interest groups of the merit and utility of Sciart-funded products for their work/training (at least two projects)
- inclusion as a model case study in an academic publication (at least one project)
- sales of work to private or industry buyers or distributors (at least two projects)
- on the basis of Sciart-funded work, an artist was selected to work with a more prestigious arts production company than prior to the Sciart project (at least one project)
- on the basis of Sciart-funded work, artists were selected to show work in exhibitions of greater prestige than prior to the Sciart project (at least two projects)
- on the basis of Sciart-funded work, artists were approached with the offer of commissions or representation by commercial dealers or agents (at least three projects).

In addition to these qualitative indicators, there were others suggesting a popular level of appeal or interest that might nevertheless imply judgements of quality, such as:

- attracting unusually high attendance at host venues (at least three projects)
- attracting national and/or international print media coverage (at least three projects)
- attracting national and/or international broadcast media coverage (at least three projects).

In addition to the case study evidence, data were also analysed from other elements of the evaluation regarding the quality of Sciart-funded projects. The survey of the experiences of both successful and unsuccessful applicants to the Sciart scheme, for example, suggested that a significant proportion of Sciart-funded projects had succeeded in eliciting positive press coverage. Two-thirds of Sciart project participants who responded to a question on this subject indicated that they had received positive press or media coverage (13 out of 21) and only one respondent reported the opposite. The media coverage reported in the survey was wide-ranging and included a TV series, national press (including the *Guardian*, *Telegraph* and *Times* newspapers), international specialist publications (e.g. a Dutch design magazine), coverage from professional associations (e.g. the Dutch medical association), and professional newsletters (e.g. the General Medical Council newsletter).

This extent of publicity seemed to result from a combination of three interacting aspects. First, the Trust appears to be a well-known brand that has an appeal well beyond the arts sector (though the case study research indicated that both the ‘Wellcome Trust’ and ‘Sciart’ brands were under-utilised in publicity). The second factor relates to the high level of collaboration that underpins Sciart projects, allowing publicity to be circulated to and via extensive networks. The third – and perhaps most important – reason is that the projects themselves tended to be both innovative and accessible. The high audience take-up reported by a significant proportion of the case study projects suggested that the work on show was engaging, challenging and visually interesting, and provided a stimulating vehicle through which to bring debates about the arts and science to the general public.

There is also evidence that the nature of the Sciart-funded work and of the venues in which it was shown³² had attracted an educated audience, including those who were in some way professionally involved in delivering education or training, and this in turn had helped further to spread awareness of the research that had informed it. Allied to this, much of the work was targeted at and succeeded in generating an interest from an 'expert' community, drawn either from the arts or from the sciences. This high level of 'peer' interest could be seen as a form of 'peer review', which the case study testimony showed had often been of a positive nature and had had fruitful professional outcomes.³³

The case study analysis revealed that the outputs of Sciart projects were frequently selected for exhibition in venues whose programmes are considered high-quality and high-profile, including places such as the Barbican (London), BALTIC (Gateshead), Cornerhouse (Manchester) and the Hunterian Museum (Glasgow).

3.2.1 Perception versus reality

It is interesting to compare these findings, based on objective indicators, which testify to the quality and merits of the work produced by a random sample of case study projects (a sample that equated to about 7.5 per cent of the total number of projects funded), with the subjective perceptions of those who had been involved in, or else had observed from a distance, Sciart-funded activity.

The predominant view among the non-recipient 'expert' group of interviewees was that the work that had resulted from funded projects had been of mixed quality, but that that was to be expected given Sciart's focus on and encouragement of eclectic interdisciplinary collaboration and experiment.

With a scheme like this it can be quite difficult to assess as a body of projects, or of practice, because it is so wide-ranging, particularly during the consortium period when all the sciences were eligible for funding. An eclectic wide-ranging set of subjects were addressed. And there were a lot of developmental projects, so it is pretty wide ranging in its outcomes...Some really significant projects did emerge, but the quality and the range were both very broad really.

Most expert commentators and project participants agreed that the quality of both the artistic outcomes and of the partnership working that had been supported had been variable. Some felt that some very poor, as well as some notable, artistic work had resulted.

Sciart funded some really awful art, a lot of really average art, some things that I would not call art at all, but also a few good pieces...

Some were extraordinary and groundbreaking...There were some as well that I don't think should have been funded, where the outcomes were incredibly weak artistically, and they were also thin in terms of the give and take that happened between the science and art collaborators.

Some interviewees were keen to accentuate the positive achievements of the scheme.

³² Most of the case study projects that had resulted in public presentation events had had exposure through venues or spaces attached to higher education institutions, including university-based galleries (John Hansard Gallery, Southampton) and museums (Hunterian Museum, Glasgow).

³³ One case study project had resulted in a film that had been widely circulated for use as a training aid in a niche sector of healthcare. An extensive evaluation conducted by the scientific partners to this project found that the professional target audience for the film had rated the film highly in terms both of its artistic quality and its value as a training resource.

The Marcus Coates project is a work of genius, which he may not have done without Sciart funding...The result is a film that is hilarious and moving and also tells you a lot about birdsong. It is a perfect example of a Sciart project, which has produced an extraordinary work of art. In the list of funded projects there are, as with all funding schemes, A, B and C categories of work. But without doubt it has been well worth the investment...

Very few Sciart awards resulted in a bad project...There were a few projects where the artists were too self-indulgent. Failure however is a necessary component in any experimental scheme.

In some cases a sense of disappointment overall that Sciart was not felt to have produced a large number of very distinguished outputs was tempered by a belief that what counted above all was the importance of the experimental process that it had engendered, and that that would bear fruit for the participants in the longer term.

At the time, my sense was of a certain amount of disappointment with the outputs; with hindsight, that probably wasn't necessarily the point, and what was important was the genuinely experimental approach to working methods...On balance one has to measure the value of the process and the longer-term effect of its influence on the participants...

I am disappointed that there have not been more projects of genuinely high quality in terms of their outputs...But what they were doing with Sciart was experimenting with collaboration, and that didn't in itself necessarily produce something of genuine value. But one hopes that it created a deeper and wider way of working for the participants.

A strongly stated albeit minority view was that some arts-based projects were funded not on the basis of the quality of the art that would result but on the basis of more instrumental considerations to do with the benefits that the project might have in terms of the communication of science. The criticism was that the outcomes sometimes did not stand up to independent scrutiny as artworks of significant merit.

It could be held responsible for creating a certain type of work that isn't always good as artwork. Some projects that would not otherwise be taken seriously as contemporary art were sometimes able to get funding...Contemporary art is defined by a set of critical positions, between artists and writers and others, and the influence of Sciart has been to tug that in a not entirely positive direction...

You should always be aiming at having the best possible contemporary art, and at times that hasn't always been the case with Sciart because the reasons that the works are being selected for funding are coming more from a science and public engagement and science interpretation angle...I've seen far too many projects where you have a not very good artist doing illustrations of cells or something, and I don't think they would have got their projects off the ground if it wasn't for Sciart funding.

An alternative and in some ways contradictory position to that expressed above held that Sciart-funded projects tend to be more concerned about the quality of the artwork, and less concerned with instrumental outcomes, than are many arts projects focused on areas of healthcare and biomedical science.

What differentiates Sciart in this overall area of arts and health activity was that there was a sense that the quality of the artistic outcome was important. Many arts projects in a healthcare setting are done specifically with healthcare goals in mind. Sciart projects could in some cases involve that, but there was a sense in all Sciart projects that that wasn't paramount and that artistic exploration and development was always a key driver for the project. Sometimes unplanned for medical outcomes may have arisen...The case studies for

*Mapping Arts*³⁴ were chosen because they seemed to be strong projects where the artistic outcome was felt to have been of a high standard.

Interestingly, one scientist invoked natural selection as a metaphor to help account for his perception that only relatively few Sciart projects had managed genuinely to move forward the cause of artistic or scientific discovery, whereas the majority had produced undistinguished results. This, he suggested, was probably the fate not only of Sciart-funded activity but of the predominant mass of similar activity supported by comparator schemes.

I've always done a lot of Sciart bashing because there has been a lot of crap out there. I'm hypercritical because I'm involved myself. If I applied that rigour to other parts of the arts community, would I have come to the same conclusion? I'm beginning to wonder if perhaps it would fare just as well, or just as badly...Perhaps there should be some kind of comparative evaluation against other similar projects that aren't Sciart in nature. You cannot have natural selection without having a lot of species dying off in order to allow the others to move forward. It is a pyramid structure and the good stuff does start to come through.

In the evaluation focus group, some of the artists were also critical of the standard of art (and science) that had resulted from Sciart projects. It was argued that the exhibitions that emerged may be interesting in terms of their subject matter, but were not necessarily of high critical or aesthetic value. Perceptions of 'quality' in relation to Sciart projects were acknowledged to be complex, as the audiences tend to be occupationally and educationally diverse (they frequently include people with scientific, medical and artistic expertise, as well as the general public) and each category of visitor brings to the process their own perceptions of quality and value. Some artists felt that the quality of the artwork fostered by Sciart was hindered by the cross-disciplinary collaboration involved.

Too much Sciart work was merely an illustration of the scientific method and not a real collaboration and did not produce challenging work. Much of it was very uninspiring...

Sciart stuff has a bad reputation. Sciart has its own agenda – to create a thing that is a presentational tool...It's in the end about promoting what Wellcome Trust does – promoting medical science. Making interesting work is tough enough without this promotional thing. For Wellcome, quality of art is way down the list [of priorities]...

It is inevitable there is some lousy stuff coming out of Sciart. Good art is a rare thing and it should be. They [the Wellcome Trust] have to support lots of crap in order to find something that really excels. This is the same in science.

One artist reported hearing a curator of a gallery remark: "Sciart – nothing good ever comes out of that." This artist added that you rarely see artwork generated from a Sciart project in either commercial or experimental galleries. Another artist made the observation that "some projects had virtually no art and virtually no science". He did not necessarily see this though, as a reflection of poor quality. His explanation was that "there was no single output for my project. Outputs simply were not an important part." Other comments made by artists in the focus group implied that the quality of outputs may be not a true indication of deeper and higher-quality practices that emerged through the *processes* of Sciart projects, and that perhaps these processes need to be more fully communicated, evaluated and reflected upon.

³⁴ Sheridan and Pring (2007), a study commissioned to evaluate the benefits of arts projects in healthcare settings in London. Half of the case study projects chosen for this research project had received Sciart funding. The *Mapping Arts* study is discussed further in section 9.6.

The value of process is underlined in the comment: “Both sides profited enormously but there is no single output that shows that.”

Not all the views expressed in the focus group regarding the quality of Sciart work were negative: one artist who had had work from a Sciart project selected for a Royal Academy exhibition pointed to that as evidence of significant peer review and “accreditation”.

Within the focus group there was disagreement about how rigorous the Trust had been in determining artistic quality. While some argued that there was little concern for quality and a largely “hands-off” approach was adopted, others felt that Sciart had been “extremely rigorous” and “very stringent”. A respondent who had been on the selection panel after her own grant had ceased commented:

Wellcome Trust is a fantastic institution, doing great stuff, trying to bring art and science back together to have a conversation...Maybe you need longer and more projects before quality will emerge. Sciart has only been going for ten years. You need quantity to bring about quality. Taste is a complicated issue – and subjective.

While there was some criticism regarding the quality of the outputs of the scheme, there was strong overall support within the focus group for the pivotal role played by the Trust. The artists felt that participating in a Sciart project had enabled them to make new connections, broaden their audience reach and work in new ways. It was generally agreed that the connection with the Trust “was fantastic for publicity”. Sciart was thought to have “opened new ground, new areas, and new avenues” and it should be continued in some form into the future.

An important qualifying coda needs to be introduced here to put the totality of perceptions summarised above into perspective: comparatively few of those interviewed claimed an in-depth familiarity with a large number of Sciart-funded projects. More commonly than not, artists and scientists who had themselves participated in Sciart-funded activity confessed to having seen few, if any, other Sciart-funded projects. If they were familiar with them it was usually through having seen the outcomes presented at Sciart or other conferences. This did not, however, prevent most of those who were questioned from expressing an opinion about the quality of what they thought had been achieved. This suggests that the mythology of Sciart (the climate of opinion that has grown up around it) may possibly be more powerful than the reality.

Chapter 4: Key themes to emerge

- Sciart grants had resulted in new processes of working and in innovative outputs.
- Process was often as important as product in Sciart-funded projects.
- The open-endedness of Sciart encouraged risk-taking.
- The perceived 'permission to fail' was seen as a strength of the scheme.
- Artists were more likely to be innovative and take risks than scientists.
- Collaborations between artists and scientists had continued after formal funding had ended.
- Initial Sciart 'seed funding' had often helped to attract follow-on funding.
- Many innovations had resulted from Sciart projects; these had not always been fully capitalised upon.

4.1 Process versus product

A distinctive, positive feature of the Sciart scheme, as compared with other funding programmes, was the unusual emphasis that it was felt to have allowed in many funded projects to the process of discovery and exploration. For some, this shared process of discovery was the major output of the scheme, rather than the more public outcomes.

The different levels of funding, from R&D to Production, does highlight the relative importance placed in some projects on a more private focus on process, as opposed to public outcomes. Many people testified to the benefits and enjoyment experienced during the process from all kinds of people involved.

Interviewees commented upon the complex relationship that had often been observed to exist between the 'product' that emerged from projects and the 'process' that had led to it. It was felt that the value of the process needed to be fully considered in evaluating the scheme.

To evaluate the scheme you should look both at the outputs – artists always want to make something in the end – but also at the less tangible things that came out of it. Artists want product, but of course the process is important too. Process and product are almost impossible to pull apart...

Projects should be judged both by the quality of interaction and process and by the tangible aesthetic outcomes... We tend to think of value for scientists more in terms of process than of product. For an artist, a work of art is an anticipated end; they are very aware of product and the final outcome.

For many commentators the process was considered to have been pre-eminent. Yet despite the strong expression and appreciation of its value, there appeared often to be inadequate documentation of and reflection on this process. This limited the possibility of knowledge exchange occurring.

In most projects the process itself was the driving force. In most instances the outcomes didn't become apparent until the process was underway...

Method and process was always very very important in Sciart projects. There is definitely some tension between matching the process, that is often quite rich and useful and informative for the collaborators, with a project outcome in the traditional sense, such as an exhibition... There is a sense that the process is almost more important.

Some cautioned against the reliance upon judging outcomes only as these tended to obscure the valuable learning that took place between project participants that was unlikely to be reflected in a tangible way in the finished product.

There is an absolutely necessary and perfectly natural and valuable emphasis on public outcomes, but sometimes that might mean that some of the learning that goes on in the process might get lost a little bit. As a scheme overall, it was probably more significant in terms of the processes that it supported rather than outcomes. Some really important things came out of the collaborations that are really really difficult to represent in a final body of work.

Repeated reference was made to the intangible quality of the benefits that were thought to have accrued to both artists and scientists from their engagement in the collaborative process. There was a perception that the fruits of collaborative engagement might not become manifest immediately, if at all, but that value filters through into the general cultures in which the respective collaborators operate.

I find 'success' a difficult word, because pretty much without exception the collaborators found it an interesting and valuable process. It brought a new and interesting experience to bear on their respective areas of practice. Even for projects that didn't reach the expected outcomes, I still think that pretty much without exception the process was regarded by both parties as successful...

There has to be an understanding that there may well be perfectly valid and interesting conversations between an artist and a scientist that, while they continue to be interesting, do not have an outcome or yield a particular product, but that they can still enrich and inform a kind of wider dialogue. So there is huge value in the process.

Some of the project participants, particularly the artists, explicitly stated that process was a more important consideration in terms of their professional practice than the desire or drive to achieve a product. The Sciart scheme was valued among the artistic community for its acknowledgement of and support for the value of process.

I'm not actually usually interested in outcomes as product, except where they make interesting processes visible... Compared to other funding schemes it did seem to be more open to enabling that emphasis on process to develop. That is certainly how I used the money that I got; to facilitate access to places where the processes of science take place.

For some artists and scientists the unique challenge and appeal of Sciart lay precisely in the invitation, felt to be inherent in the aims of the scheme, to develop methods and processes of interdisciplinarity, as opposed to having to work towards a defined outcome. In the words of one scientist, "the 'how' of the thing" was allowed to be as important as "the 'what' of the thing".

If we are going to have made a unique contribution somewhere, I think that it might be in terms of developing a new method of interdisciplinarity. We had two good outcomes in terms of our respective practices, but we had also this important meta-thing: of reflecting about our shared method, and about the research process. The 'what' of the thing is the two artefacts that we produced in our own disciplines; and the 'how' of the thing is the interdisciplinary method...

There is a lot of work to do on the assumptions about how artists and scientists can work together...It is commendable that people who want parity should have schemes to refer to where that is allowed and encouraged...For me, the core activity should be to focus on the methodology. On the 'how you can work together' bit. It is that principle, of how you can work together, that could be generalised and made use of...We are always encouraged to work across disciplines, but the matter of how to do so is never the subject of enquiry.

4.2 The flexibility and open-endedness of Sciart

Two of the most highly prized attributes of the Sciart scheme were its flexibility and its open-endedness. Artists and arts producers in particular valued being able to embark upon projects without having to specify at the outset what the process would lead to. It was felt that this approach helped to encourage explorative dialogue and to maximise the learning potential inherent in projects. There was widespread appreciation for the non-prescriptiveness that was felt to characterise Sciart management, application and evaluation systems.

When we get government funding it is clear what we have to produce. That can be audited, and we have to tick off a list of promises that we've made. We know at the start what we are aiming towards. In Sciart collaborations there is an openness to engage but that often means that at the beginning nobody really knows what they are getting in to...

One of the important things about the structure of the scheme was that it allowed a framework and a space for experimentation. An R&D project could be very open-ended...Quite significant amounts of money were available to support that. So it allowed a space that maybe wasn't being provided by other funding sources. As a result, I think that there was more experimentation or open-ended enquiry.

A perceived virtue of the flexible approach adopted towards Experiment and R&D projects was that artists felt that they had permission both to depart from their comfort zone (their area of proven artistic competence, for example) and to change direction if their explorations seemed to demand it.

If I received a commission to do an adaptation for a play I would not within that have had the chance to develop a film script. So the flexibility to develop in an unseen direction has been a successful element of the project, and I felt from the beginning that there was a lot of support for real exploration and experimentation within the terms of the funding...For a lot of other funding you have to prove that you already have an expertise and you have to go along with that expertise to fulfil certain targets. This funding has been quite unique in that I still function as a sort of director and adaptor but the chance to try out a new medium and to get support for that was really helpful.

There was a view from within the scientific community that this entirely speculative approach to embarking on the research and development process – where the outcomes remain undefined and unpredictable – is more easily embraced by artists than by their scientist collaborators, for whom clear measures of success are the expected norm. It was suggested, however, that partly through the example of Sciart this mindset may be beginning to change.

Those [scientists] who are open to it [Sciart collaboration] are so without really knowing what it is that they are doing it for, and at the end of the process you would be hard pushed to tick the boxes and say well yes this is what came out of it. There remains an absence of the kind of well-defined clarity that you would expect in a science project, where it would be clearer at the start what a well-defined, successful outcome would be. Ten years ago I might have shared that sceptical scientific view. I don't think that my clarity has increased any over that time, but that is not a criticism because I can see now that the unpredictability of Sciart projects isn't necessarily a negative thing, but some people would see that as a problem.

4.3 Sciart and risk

The permission to embark on a project with a measure of open-endedness was strongly supported. Many interviewees subscribed to a doctrine that encouraged more playful research. This linked to the perception among interviewees that the Sciart scheme was open to risk-taking, and that had enabled it to support and nurture new developments and innovation, particularly in the arts. The perception that the Sciart scheme had encouraged risk-taking was also evident in the responses to the survey carried out into the experiences of both successful and unsuccessful applicants to the Sciart scheme. A majority (62 per cent) of respondents whose applications were successful reported that participating in a Sciart project had made them more prepared to take risks in their work.

It's like any funding scheme: you get some projects that work very well, and others that don't, but it's really important to take a risk. If you are not prepared to invest in new territory and new explorations that will make for a very static environment. From my own project, I know that Sciart does take a risk with people working with other people that they have not had access to before, to look at territory that they have not explored before. That's a good thing...

It is not necessarily that other funders are more risk-averse, but the Experiment scheme, for example, was an incentive for artists to investigate a really early seed of an idea in a light-touch way that might involve some kind of communication for whatever period of time with a scientist, and I think that was quite unique at the time. The scheme took an explicit stance to do that...

With funding schemes, sometimes it's important just to give people money: not to produce the outcomes that are promised, but just to invest in them to see what might arise. That kind of approach is more difficult to justify, but, in terms of artists, it might be a more productive way of funding them.

Associated with the embrace of risk, there was felt to be an acceptance of the possibility that not all projects would succeed, however success might be defined or negotiated. Again, this 'permission to fail' was lauded by some as a defining strength rather than a weakness of the scheme.

There is built into the scheme the permission to fail. I mean that in an absolutely positive way. These are all projects that are research in the academic sense. They were setting out to find things out that you didn't know the answer to before you began. This search for the unknown was one of the really, really exciting things about the scheme... So there was always going to be more emphasis on the process; in many cases you really did not know what was going to happen at the end. That is a crucial thing in the development of new knowledge: that you don't know at the outset exactly what you are going to find out...

[It] was a great project because it asked questions where you didn't know what the answers would be. It offered a whole set of proposals that may have seemed completely off the register. Proposals like that, which almost seemed doomed to fail, are what give the scheme its energy, and to me they are at the heart of the Sciart project.

There was a perception among interviewees that artists tended to be more open to risk than their scientific counterparts but that the scientists might be more willing to embrace risk through the influence of the artists.

There are things that artists will do that scientists would not do; it's to do with daring and a willingness to experiment...

The openness to risk absolutely got transferred to some of the scientists.

There was also felt to be a differential in attitudes to risk between early-career as opposed to more established scientists.

The younger, less experienced, scientists tend to be more risk-averse because they are more worried about their career trajectories and are less confident in their situations on the whole than their more senior colleagues.

In the evaluation focus group, it was suggested that collaborations between science and art are perhaps more 'risk-taking' for scientists than they are for artists. It was observed that artists inherently take risks, whereas science tries to minimise risk. This argument was expanded to infer the degree of safety that an artist and a scientist respectively may feel when embarking on a 'risky' project such as a Sciart collaboration:

Scientists often feel more vulnerable in science–art projects. It reflects badly on scientists if the outputs of the research are challenged. They consider themselves to be in a more questionable position. Artists work in a climate of doubt and scientists work in a climate of true evidence.

4.3.1 The decline of risk-taking

Among the 'experts' who were interviewed, there was a minority view that the opportunity to take risks had become somewhat diminished in the later years of the Sciart scheme. It was suggested that this was because more fully worked-out proposals were looked for, which militated against the 'rawer' forms of speculation that had emerged in the scheme's early days.

It became evident that in the later years of Sciart you had to work with a scientist in the development of the proposal and had to arrive by the application stage at a sophisticated understanding of the scientist's role in the project and to have established a commitment to work together. All that is good in theory, but the result was that perhaps less wacky ideas came forward. Some of the inchoate rawness of ideas was lost through the process of doing that preliminary research and preparation...It became more the norm to reward projects that had a real scientific content, that weren't just the usual 'here is my art idea and if I get the money I'll work out how to work with the scientists'.

Based on the experience of prohibitions and assumptions that had arisen during the course of one particular Sciart-funded project, the artist and the arts producer involved observed that the scientists they had worked with had assumed that arts institutions have a freer rein to take risks in a way that could not be permitted in the regulated environments occupied by scientists. In fact, this particular project had discovered that arts institutions too are becoming increasingly subject to regulation, prompting them to conclude that the space for risk, even within the domain of the experimental arts, is diminishing. Across the cultural spectrum, risk was felt to be on the wane.

It was interesting that the scientists had the view that you could just do anything that you like in an art gallery. Under current health and safety regulations that is just not true. So it is interesting that from both sides now you might face restrictions...There are some kinds of work that you are now no longer able to make. The bigger picture is of the over-regulation of art and of what artists are now allowed to do. Almost all public institutions now are governed by regulations and ethical protocols, which means that they can't sanction some kinds of work.

4.3.2 The Wellcome Trust and risk

Some interviewees were strongly of the opinion that through its initiation of – and commitment to – the Sciart scheme, the Trust had demonstrated its credentials as an organisation that was prepared to invest in and take risks.

The strength was that it was quite risk-taking. It was a really important risk for an organisation like the Wellcome Trust to take actually. It was a really interesting initiative for a medical charity to get involved in...

You could never foresee which would be the [projects] to succeed. You had to take a risk and risk-taking was what this whole thing was about...At the time that Sciart was launched, in the mid-90s, there was no other organisation in the country, and possibly the world, that would have taken that risk...They took a great leap into the unknown in the tradition and spirit of Henry Wellcome...Nobody else would have taken the initiative.

There was a division of opinion, however, over the Trust's willingness to back potentially controversial projects through Sciart. A commentator who had observed the scheme's decision-making process suggested that Sciart did not shy away from the controversial.

People used to say in the early days 'they are frightened of controversy'; on the contrary, they have never censored a thing. That is another thing in their favour. They didn't mind how bizarre or politically dicey, they would support a project if they thought it was worthwhile.

On the other hand, a commentator who had been subject to the Sciart decision-making process felt that the Trust was conscious of attracting bad publicity and that this might have had an impact on which projects were funded through scheme.

Sciart has probably shied away from funding things that the Wellcome Trust thought might prove too contentious. It didn't want to risk bad publicity. I don't think it should have been so concerned about that...The Wellcome Trust needs to recognise its role within a larger system of knowledge and not be perceived as quite so conservative in terms of the work that it chooses to fund...Artists really engaged in social change and in criticising science's trajectory and the ideology that 'technology will save us all in the end'...should be embraced by Sciart-type funding; it should not be afraid of that.

A minority of artists and arts producers who considered themselves to be working at the more critical and controversial end of arts practice believed that the Trust occupied quite a conservative position in relation to mainstream science and that this made it more risk-averse as an arts funder than organisations that were more independent of the science sector, such as Arts Council England.

Although it appears to be working at the boundaries of innovation and experimentation, there is perhaps an inherent conservatism in where the scheme is coming from that sets limits to innovation in the arts. It is much more about exploring ideas within science than in fostering true experimentation in the arts. There is an emerging interest internationally in artists who really get their hands dirty in the laboratory, with tissue culturing and genetic modification; artists who are, effectively, doing amateur biotech home experiments. I

suspect that Wellcome Trust wouldn't welcome it if amateur biotech was to become too flourishing a movement...

I think the fact that the Wellcome Trust needs to look after mainstream biomedical science makes them nervous of critical work. I haven't gone to them with certain projects because I know they just wouldn't fund them. I tend to go to them with quite safe projects that I think might fall within their remit. Other funders are, I think, more liberal and willing to take risks. ACE might get nervous, but they wouldn't turn me down because of the critical nature of the artists I'm working with.

4.4 Sustainable seeds

Along with flexibility, open-endedness and risk, another strong theme to emerge from the evaluation interviews was the importance of Sciart as a seed funder of ideas and projects. It was suggested (and this was confirmed by the experience of some of the case study projects) that Sciart funding had acted as a mark of endorsement that had helped to attract further funding to allow ideas to move on to the next stage.

Sciart funding was often seed funding and it enabled the projects to get further funding that they could not have got without that initial funding. They gave money to what X called the 'fragile flowers' that could not possibly at that time have got funding from anywhere else. That is one of the most significant successes of Sciart.

There was a strong sense that initial insights that had been gained and new directions that had been started through the process of working on Sciart-funded projects had been able to flourish and reach fruition at some point beyond the period of Sciart funding. In this way, Sciart's investment in explorative research proved to have sustainable and longer-term effects. These catalytic effects often seemed to stretch beyond the boundaries of the original funded project.

An important outcome of that award was that it seed-funded an experimental project that grew to become something that had a wider reach than we had initially envisaged...

The strength was that it was seed funding that has led from one thing to another. And it has led to further projects and to a sustained creative process.

An artist who attended the focus group reported that the Trust funding had enabled him to open up a new area of practice, which he had gone on to pursue under his own steam. The initial funding acted as an important catalyst that had spurred him to make the transition into an unfamiliar area of creative research, which had been sustained through enthusiasm rather than further funding.

The first funding from the Wellcome Trust was pivotal. That got me started, but after that, I do the work anyway. The funding acts to sort of push you forward...and I would not have pursued the subject matter without it. After that first work the research questions became so powerful. The funding pushes you in the beginning but then the interest and passion take over.

4.5 Sciart and innovation

A range of views were expressed within the evaluation interviews regarding Sciart's relationship to innovation. It was generally felt to have made a significant contribution in this area. This perception was supported by the responses to the survey carried out as part of this evaluation into the experiences of both successful and unsuccessful applicants to the Sciart scheme. A majority (81 per cent) of the successful applicants for Sciart funding reported that their project had inspired new methods in their work. A majority of successful applicants (62 per cent) also reported that it had made them more innovative, with only 14 per cent disagreeing.

In the view of one interviewee, Sciart could be credited with having provided a new and welcome form of catalyst for intuitive percipience leading to invention.

I have defined what I call a new kind of creativity resulting from the Sciart collaborations...I really think that that has happened. Conventional design training is technologically based and innovations tend to be just tweaking around, moving a design on to the next phase. Sciart has demonstrated that it can work at a higher level, which is a way of not just technologically improving things, but of bringing in the intuitive element and seeing new opportunities where none had existed previously.

Sciart projects were felt to have evidenced a range of types of innovation – across the arts and the sciences and at a technical as well as at a conceptual level.

The Sciart projects were incredibly innovative, particularly in the ideas underpinning them; and as soon as the different parties get together even more amazing ideas were enabled to happen...Innovations also happened at the level of processes and techniques...Whilst the innovations tended to be more visible as artistic outputs, there was a sense that new insights were shared by the scientists, medics and some of the academics too...

Catherine Yass's presence at the School of Pathology led to an innovation in the way that their palettes were coloured. They started to stain experimental samples in a different way in order to make them more legible. That wouldn't have happened without Catherine's presence in those research groups. So innovation did happen at a scientific and technical level as well as at an artistic level. It didn't affect the science per se, but it affected the way that it was delivered.

Various theories were advanced as to why and how Sciart was felt to have made a contribution to innovation. The element of novelty and surprise that comes from fusing together the unfamiliar was felt to be a possible factor, as was the emphasis that the scheme placed on speculation and open-ended enquiry rather than problem solving.

It is a commonly held view now that innovation and creativity is about making imaginative connections between things, rather than just making something new. That whole principle of making surprising connections, which underpins the whole Sciart project, is a very positive element of it...

Any time within science or art that you insert something that didn't belong there before, it will inevitably be a catalyst for new thinking. And absolutely the Sciart programme has done that, and it was its purpose to do so...

The projects that were funded were primarily asking questions, not providing answers. In that way, Sciart is really contributing to and encouraging innovative, research-based practice in art and science.

At a public level (and in conjunction with some of the partners involved in its consortium phase) Sciart was felt to have contributed to a wider awareness of and discussion about the nature of innovation.

It stimulated new discussion about innovation and creativity, at a public level and between the partnerships involved...It certainly aimed and tried very hard to create new forms of expression...I recall a lot of discussion not only at Sciart forums but at NESTA, at SMARTlab and elsewhere, all talking about these issues: What is innovation? What is intuition? What role do artists play in bridging communications across these divides? I think Sciart did make a difference in terms of social awareness of the role of creativity and innovation.

In one view, Sciart's ability to foster innovation was constrained by the time that funded projects had available to them.

We won't see a real revolution in innovation until we have longer-term projects that are genuinely blue skies...Truly innovative projects take as long as it takes, and in many instances for the full learning process to take place the constraints need to be exceeded, and often that can only happen if there is some voluntary input of the participants beyond what is enabled by the funding programme.

In general, it was felt that Sciart had been more effective in fostering innovation in the arts than in the sciences. Several expert commentators from the science field expressed doubts that what was essentially an arts funding programme could realistically be expected to provide a spur to scientific innovation. Claims to the contrary were dismissed by one commentator as dangerous rhetoric.

I couldn't really point to any real influence on innovation in science that resulted from the scheme. The scientists beaver away in their lab and maybe the interaction with the artists may have made them think about their work in a wider context, but I don't think that you could say that it necessarily led to innovations in science...

It is a very dangerous thing to assert that artists can encourage scientists to make a leap forward in creativity. That is rhetoric, rather than reality.

A small number of interviewees alluded to the potential for commercial and/or practical exploitation that was felt to reside in some of the innovations that had been fostered by Sciart funding. One individual expressed a strongly held view that more efforts could have been made to capitalise on such innovations. It was suggested that this perceived failure fully to exploit the innovative potential of the projects funded might be linked to the not-for-profit remit and ethos of the Trust.

The hidden potential of some of the projects should have been more possible to pick up through organisations like NESTA. As it is, it is still waiting in the wings. Particularly in regards to the potential of some of the ideas for wealth generation, and because of their remit as a charitable trust the Wellcome Trust has never been the slightest bit interested in that potential.

Chapter 5: The impact of Sciart on artists and art practice

- Sciart projects were perceived to have greater benefits for the arts than for the sciences.
- Working alongside scientists gave artists greater access to equipment, resources, new knowledge and improved research processes.
- Artists' careers and practices were often enhanced through participation in Sciart projects.
- Artists acted as a proxy for the public, opening up scientific practices to a wider gaze.
- Working alongside the arts often improved communication about science and made science more accessible to the public.

5.1 More arts than science

Although originally the Sciart programme had aspired to position itself at a midpoint between the arts and the (biomedical) sciences, the interviewees clearly saw the scheme as predominantly an arts funding programme. There was a clear sense that it had penetrated much further into the collective consciousness of the arts world than into the sciences.

You can find Wellcome Trust brochures where the prose emphasises implications for science; that rhetoric wasn't really matched by the reality of the projects. There were hints that this was not a one-way street and that interesting outcomes for scientists could arise, but it felt essentially as though it was always an 'artist stroke culture' scheme, with the role of the scientist being to provide the ideas, or else ensure there were no outrageous inaccuracies in what came out of it...

Sciart is much more visible now...A decade ago nobody would even have been approaching me to put on shows. I get offers all the time now, so there is clearly much more interest from the perspective of the arts community. But from a science point of view, I doubt that much has really changed...

Generally, the field has more respectability and credibility. But I'm not convinced that if you went into a lab in Manchester or Leeds now they would know what Sciart was, or that the Wellcome Trust had been funding this scheme.

The perception of a strong bias towards the arts tended to be confirmed by the opinions of the artist participants in Sciart-funded projects.

All the folks involved were following our agenda really...They were serving our artistic vision more than we were illustrating their science...

Its greatest weakness is that it didn't think about putting more scientists in the art world, rather than trying to place artists in the science world. It overprivileged a one-way exchange...It would be interesting, perhaps, if the Wellcome Trust would give arts organisations money to see what would happen if they brought a scientist into their world.

Interestingly, 66 per cent of the artists who participated in the evaluation focus group declared that they had had some kind of scientific background prior to their engagement in a Sciart project. While the small numbers involved makes drawing general conclusions problematic, it may be that artists with a 'scientifically' oriented history are more attracted to working in science and art collaborations. One artist commented that a more closely aligned background increases the likelihood that a partnership will be successful.

Partnerships are most effective where the scientist has an affiliation for the arts. Some scientists are actually closet artists.

5.2 Artists' gains

The consensus view from the evaluation interviews was that the weight of the scheme was skewed towards the arts and that it was the artists that derived most benefit from the opportunity for collaboration.

Its influence was not equal on the respective communities. The influence was much more on the art side, and the benefit was also much more on the art side...

My gut feeling is that the collaboration had a much bigger impact on the artist than on the scientist. The tangible impact of the projects always seemed to be greater on the artists. They got quality time with individuals who were practising at the top of their trade it was a great learning process for them to be funded to spend time with real experts. That was a terrific opportunity. And the effects tended to be ongoing.

The survey findings also pointed to the importance of Sciart funding as a catalyst for change and development within an artist's practice. It had led in the vast majority of cases to changes in both the method and content of the work. Of the grant recipients, a very high percentage of respondents (81 per cent) agreed or strongly agreed that receiving the grant – and the collaborations it engendered – had inspired them to adopt new methods of working (see figure 1). In addition, 62 per cent of grant recipients reported that Sciart had changed the content of their work (see figure 2).

Figure 1: Effects of Sciart participation on methods of work

Grant recipients on 'participating in a Sciart project has inspired new methods in my work', %

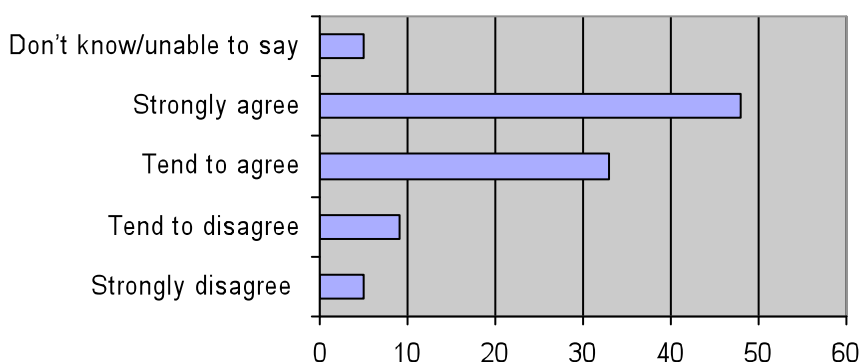
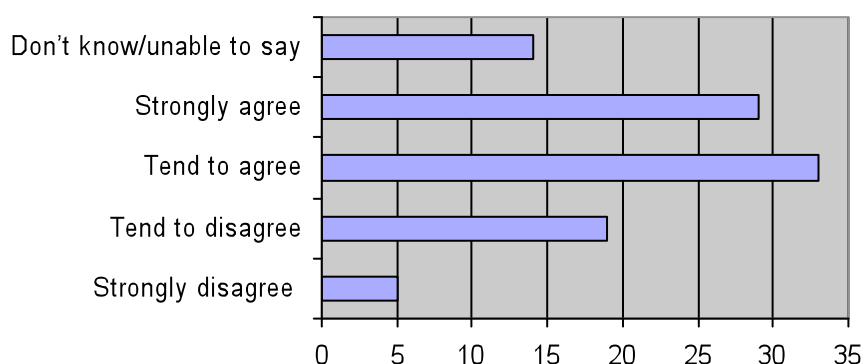


Figure 2: Effects of Sciart participation on content of work

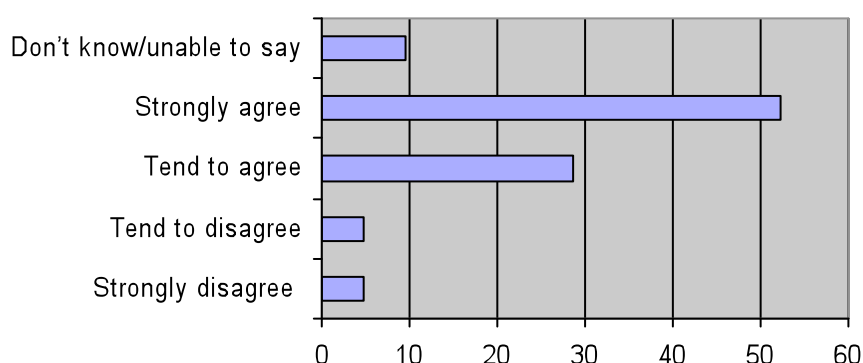
Grant recipients on 'participating in a Sciart project has changed the content of my work', %



Importantly, of the people participating in Sciart projects (both scientists and artists) a very high 82 per cent (see figure 3) reported that their involvement in science and arts projects had provided them with new insights. Only 10 per cent reported their participation in a science and art projects had not led to new insights. These figures could provide a positive explanation as to why many of the relationships, collaborations and networks formed during the life of the project were continued beyond the formal duration of the project.

Figure 3: Effects of Sciart participation on providing new insights

Project participants on 'participating in a Sciart project has provided me with new insights into my work', %



The case studies provided substantial evidence that Sciart funding had prompted artists to develop an ongoing focus on biomedical themes as the locus for their work. In general this was perceived to be a good thing, indicating that a sufficiently profound level of engagement with an issue or area of knowledge had been achieved to sustain a succession of arts projects.

There were some cases where the artist, who may not have been interested in science before, had the opportunity through Sciart to realise a project, and have been doing it ever since...X has learned a lot about her own condition and has made a whole lot of new shows out of it. It turned her work in a new direction.

By contrast, it was observed that there could be potential downsides to an extended concentration on the biomedical sciences.

X put her heart and soul into this [over a number of years]...I think, to very good effect, but I hope there isn't a danger of her becoming stuck in this project...She possibly needs something completely different now, I think, to move on...

An artist and a representative of an arts production agency both observed that participating in Sciart projects had been valuable in the sense of helping them to understand and articulate better their own practice.

It has helped me to define more clearly the kind of territory that I am investigating, across all of my work. The work with Y is not just confined to the actual works that we worked together on; it has influenced the way that I can articulate to myself what it is that I have been working on...

This award enabled us to formalise those invitations to work with scientists, and to recognise that as a part of our organisational practice. I think it was there before, but we hadn't either articulated it, or consciously tried to address or attract audiences in that area.

There was a view that the public's perception of artists as effective communicators may have been enhanced because of their participation in Sciart projects, and that their communicative abilities had helped to demystify and make more intelligible aspects of contemporary science.

There is a better understanding within the public in general of the role of artists as communicators, as well as skilled professionals...The public perception of that has shifted for the better, partly through the influence of Sciart and the public engagement activities that resulted from it. There is also a better general understanding that science is not the result of a god-given stroke of genius, but is something that can be understood in relation to our own situation and needn't necessarily be abstract and impenetrable.

5.3 Raising the profile and improving the career opportunities of artists

An important effect of some Sciart projects was that they had helped to draw attention to the artist's work. For some, Sciart projects had been instrumental in helping them gain a significantly higher profile within the professional art world and had been influential in helping them to secure high-quality exhibiting and commissioning opportunities.

Examples of this, drawn from the ten case study projects, are:

- In at least three instances Sciart projects enabled the artists to secure opportunities to make and show work with more significant production agencies and/or in more prestigious venues than had previously been the case.
- In at least two cases a very high level of national and international media coverage was attained, to an extent that was unprecedented for the promoters and venues concerned.
- In one case the artist's Sciart-funded work commanded a high level of critical scrutiny from the serious arts press that was unprecedented both for the artist and for the host venue.
- In three cases the projects had helped the artists to gain commercial representation through a dealer or an agent for the first time.

Several of the artists and curators interviewed were keen to testify to the importance of the project in terms of the artist's overall professional advancement.

There was a spiralling effect in terms of the doors that it opened up to other opportunities, such as other showings and screenings. A lot of things have begun to happen for me since then. I got a lot of critical feedback and it became a doorway on to other things through its wide exposure in places like the British Art Show; a lot of people got to see the work. So it was quite an important project in terms of raising my profile and visibility...

He's been on an enormous upwards spiral: being included in the British Art Show, having more international exposure, such as at Manifesta, and opportunities for solo shows. This project was absolutely a catalyst for that...

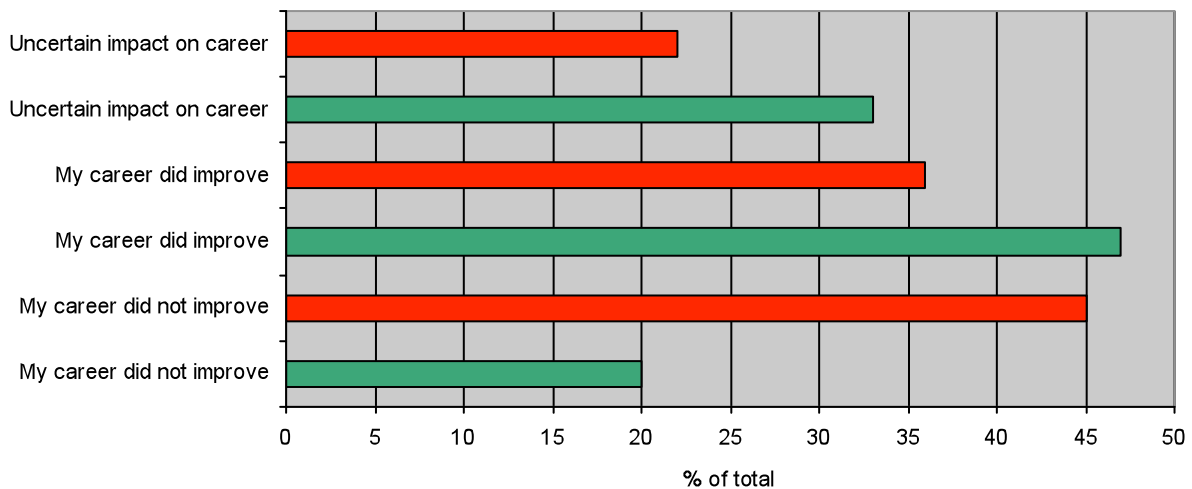
(NB this was a different artist from the above-quoted.)

A few commercial galleries had shown an interest [before the Sciart project], but nobody wanted to be the first to make a commitment. In that sense this was a breakthrough show for her. This show was one of [our] projects that has had the most major impact recently in terms of the artist's career progression.

The survey of successful and unsuccessful grant applicants indicated that there was a significant difference in the improvement of careers for those artists receiving grants compared with those that were not successful. Although a causal relationship should not be assumed, this appears a noteworthy finding.

Figure 4: Impact on artists' careers

Artists' assessments of their career paths subsequent to receiving/not receiving Sciart funding (successful applicants in green, unsuccessful applicants in red)



From figure 4 it would appear that there was a significant difference between the career trajectories of the successful and unsuccessful applicants. There was an 11 per cent greater improvement in careers for the grant recipients ('My career did improve'). Similarly, 45 per cent of unsuccessful applicants felt their career had not improved, whereas only 20 per cent of successful applicants felt there had not been a career improvement ('My career did not improve'). It can be inferred from this data that receiving a Sciart grant generally had a positive effect on career pathways for artists, though in making this interpretation, the quite large percentage of 'uncertain' responses, especially from grant recipients (33 per cent uncertain) means that effects (either positive or negative) on career might be difficult to ascertain.

Furthermore, of the successful grant recipients, 52 per cent agreed or strongly agreed that getting the grant had improved their career, while the minority (33 per cent) felt it had not improved their career. If this is compared with the people who were not successful in obtaining a grant, only 29 per cent of the unsuccessful applicants had noted improvements in their careers, while 43 per cent said that their careers had not improved. This evidence suggests that receiving a grant had resulted in an improvement in artists' career prospects and could have been a factor in reducing the likelihood of careers faltering.

5.4 Artists as researchers and socially engaged collaborators

An important insight confirmed by a number of interviews was that the emergence of Sciart had coincided with the growth of certain tendencies within the arts that had made artists more receptive to the opportunities for interdisciplinary engagement that were offered by the scheme. In particular, the period of Sciart had coincided with a new emphasis within the university sector upon the making of art being regarded as a form of academic research (through what is referred to as 'research-based practice'). It had also coincided with a more general movement within the visual arts towards forms of practice situated in ideas and in relationships that are embedded in the wider social and public sphere, a tendency known as 'socially engaged practice'.

There is a general movement towards artists being seen as researchers, particularly within an academic context, and Sciart provided a context for that, particularly by making funding available and opening doors to the opportunity to work with scientists. That helps to support the idea of art being a research-based discipline...In that sense, the Wellcome Trust has tapped into a more general thing that was going on in the culture...

Artists, over the last 15 years, have become much more interested and adept at collaborating with areas of culture outside of the arts...It's attributable to a wider current within the culture of contemporary art. Artists now are working within a whole range of different areas of culture and with different social groups. There is a much deeper interest in that type of engaged practice...

It has coincided with a period when particularly visual artists, who were the main artistic participants in Sciart, have been experimenting with ideas and concepts as the raw material of their work. And the value of many of the Sciart projects is that the scientist has been able to provide a more rigorously factual, systematic context and background to those ideas.

At a time when the idea of practice-based research was gaining in importance and the arts community had started to reflect more about where its potential to add or create social value might lie, Sciart provided a fertile context in which artists could explore what it meant for the arts to be engaged in the production of knowledge. Several interviews with artists and with arts producers discussed this theme.

We are a public gallery within a university and we spend a lot of time thinking about research in the humanities, and this project looked like an interesting way of exploring that topic. Research comes to conclusions, especially in the sciences. In the humanities it is much more intuitive, and I think that these particular artists brought that level of intuition into this area of debate...

As an artist, I have a philosophical interest in the way that knowledge is constructed and imparted, which is different in science. The C P Snow idea of 'two cultures' is maybe over-simplistic, but art does have a different way of developing knowledge.

5.5 Methodological rigour

A number of the 'experts' interviewed observed that Sciart may have benefited the emergent culture of practice-based research by giving artists both access to and insights into the rigorous research culture of the scientists with whom they collaborated.

The idea of science and art collaboration was much further on at the end of that decade...A greater respect for the need for detailed research and methodological rigour grew up during that period amongst artists...

The artists have I think been encouraged to adopt a more rigorous approach to research and development, in terms of the ideas, concepts and issues that their work is dealing with...

One of the possible side benefits of this kind of Sciart collaboration is that methodologies might transfer from the scientific sphere to the artistic.

The notion that engagement with scientific knowledge and with scientific research methods had helped to add substance and a sense of authority and validity to the practice of the artists was confirmed by the interviews with several artists and arts producers who had participated in Sciart-funded projects.

Talking to Y...gave the project another level of integrity that I thought was important. Not just because the data was important to scientists and would be useful to their research; as an artistic tool, I was interested in the clarity and integrity that the scientific method can give to an artistic outcome like this...

The continued dialogue with Y has really moved the work and the thinking behind the work on. I think it has genuinely opened up new territory for me in terms of developing forms of expression with image and sound that are underpinned with a much deeper understanding of the complexity of how memory operates and how it impacts on people's lives...

What I feel Y's involvement does for X is that it gives a kind of validation or authentication to a number of things that she feels have a poetic or subjective truth that, when confirmed within a scientific framework, also gives them greater power or significance or validity.

As well as providing the possibility of methodological rigour and an authoritative grounding in knowledge, the scientific context in which Sciart collaborations took place also provided an entry point to research locations that would normally have been sealed from the artistic community. This opening up of scientific research could – especially through the dissemination of previously unseen scientific research material as it became translated and incorporated into artworks for public exhibition – bring reciprocal benefits to the scientific research community.

Research-wise it has taken us into new areas and to a depth of enquiry that wouldn't otherwise have been possible. There is so much information that no one ever gets to see that is held within concealed communities, within universities or scientific journals, for example, that doesn't really get out into the wider world. That exposure to the wider public domain is something that artists can help scientists to achieve.

5.6 A romance fascination

It was clear from a number of interviews that part of the attraction of entering into art–science collaborations was a sense of the beguiling mystique attached to the other discipline. This was probably

more a feature of the scientists' perception of the world of art, but it was also apparent in the way that some of the artists seemed to regard the sealed-off laboratories and inner sanctums of science.

There is often a romance fascination, or an attraction to this mysterious 'other', and what could be more 'other' than a group of scientists at work. That even stems from the way that in school often the artistic kids are socially divided from the science-oriented kids; they are seen as mutually exclusive talents often. I was attracted to the chance to visit an environment that was so foreign to my own.

A number of the artists said that, initially, they felt a certain degree of intimidation or even awe at the prospect of entering the hallowed and esoteric realms of science. However, the evidence suggests that the artists gained the confidence to assert their own identity within this unfamiliar domain.

We were a bit awed by the scientists at first and felt that we were not really on an equal status. But we have come to realise that the scientific view of the world is a limited view of the world, and that we are trying to do something different. The scientific view is just one facet and we are trying to make it three-dimensional by adding other facets...

From being initially intimidated by these scientists and assuming that their approach would be unfathomable, I realised that scientists can actually be excellent communicators, and very approachable. In many cases they are wonderful collaborators and spurrers-on of ideas. It has sparked off a kind of love affair, or fascination; it really has. I think the challenge as an artist is to take on the science and not to be swamped by the information, or to be too much in awe of it, but to be able to transform it into a piece of work that continues to raise some of the underlying questions.

5.7 Artists within science: a proxy for the public?

It was suggested that artists bringing into the public domain new perspectives on the work being conducted in laboratories and other places of science might act as pseudo-'public representatives' in what might otherwise remain hermetic sanctums of knowledge. In part then, the artist's contribution to the notion of 'the public engagement with science' was as an independent scrutiniser – asking questions and provoking insights that might not be possible from within the scientific community.

I think maybe there is more acceptance now of the role of the artist as a questioner, or as a creative individual with something to say about matters of interest to science; and for them to do so as a representative of the wider world, as a voice for the wider public. I don't think it is always about scrutiny; I think it is about the importance of conversation in the opening up of that space...

One aspect of this debate is trying to sell science to people so that they will go on to love it; the other is to have a genuine public discussion as to where scientists are taking us. In my mind Sciart works well in the latter scenario. It's about trying to get the public thinking about how science is impacting on their lives and ask 'should there be a public discourse about such a thing?' In that scenario, maybe artists become the representatives of the people or the public perspective...

Maybe the project helped the public to understand more about how science attempts to engage the public in its own agenda. It is part of that public relations exercise, underlying which is this notion that science is progress and is good for everybody...Perhaps art's role is to moderate or to adjust in some way science's role in relation to the public.

Chapter 6: The scientists' involvement with Sciart

- Working with artists helped to improve the 'image problem' of scientists.
- Participation in Sciart projects enhanced scientists' communication capacities.
- Sciart projects prompted scientists to alternative ways of thinking and perceiving.
- Scientists became more innovative and prepared to take risks.
- New collaborations that emerged with artists have been sustained.
- There remain barriers on the science side, including attitudinal barriers, which may inhibit arts–science collaboration.
- In some cases, the scientists became active collaborators in the creative process.

6.1 Scientists' motivations

"They are quite busy, and there's not a lot of money in it, so why do it?" asked one expert observer of the Sciart field, rhetorically. A range of potential answers were suggested during the course of the evaluation interviews. They could be summarised as novelty or curiosity, creative anxiety, and funding.

To have contact with an artist who has a completely different way of thinking can be really interesting to them. You can see them saying, 'oh right, oh I never thought of that before'. That new insight gained is a very good argument for the Wellcome Trust to continue to fund scientists to work with artists...

As a scientist there are clear expectations on you: you're going to publish in the best journals, and you're going to bring in a lot of money to your institution; your job depends on it. That more or less describes current research culture. Being creative is not a good strategy for success in that climate. Scientists worry about this. It's fine being a specialist but where are new ideas coming from? I think scientists are actively encouraging these collaborations because they are groping for creative sparks...

When artists approach a scientist they almost always get a good response, particularly if the artist can bring in some funding.

One scientist for whom the 'public engagement with science' was already an important element of their professional practice had chosen to become involved in Sciart projects out of a pragmatic desire to enhance their effectiveness in this area. They professed no interest in the arts per se.

My main reason for being involved with an arts project was as another route for public engagement with science...and that is more important than the means through which it is achieved. Whether it is through art or through documentary film is not really of concern to me. It was a means to an end as far as I was concerned.

6.1.1 Art as a means to recovering a lost plenitude

An interesting suggestion to emerge from a minority of the interviewees was that part of the attraction for scientists working with an artist might be the promise of regaining a dimension of experience that had been in some way 'sacrificed' in the business of becoming a scientist because of the professional constraints and demands of that role. This idea was first proposed by an expert commentator and it found powerful corroboration in the testimony of a scientist who had worked on a Sciart project.

There is a fantasy of loss: that those of us in science have left something behind, and we have a fantasy that maybe we can put it back together again...so there is a promise of a lost plenitude, it's about recovery...Science has become much bigger and much more expensive and more competitive, and scientists have ideals. They are hard-nosed and know what they have to do to survive, but they know that they didn't go into science just for those utilitarian reasons. So when they see Sciart, which is legitimated by association with Wellcome, with some money plus the chance to work with a real artist, I think they say 'OK let's boogie'...They are human and they don't want to spend their life churning out papers; they want to find some meaning in what they are doing...

These are two completely different cultures. We never usually have the opportunity to move into somebody else's culture and I don't think scientists value how much they could get from it. Through my PhD I learned to talk in a particular way, write in a particular way. Because of that I lost a piece of myself. Through working with X I found the way to become the real me, rather than this slightly objective scientist that I had become. I found my voice, which I had lost because of the scientific process.

6.1.2 Scientists: an image problem?

Alongside an interest in the motivations of the individual scientist participants, there was a concern with the larger issue of what Sciart collaborations might achieve for the culture of science more broadly. It was suggested by some that an involvement in projects with artists might help scientists to overcome an image problem that they were perceived to have as a profession.

In wider social terms, the public exist in this sort of inner circle where artists and musicians are hip and cool and scientists exist in some outer circle a bit disconnected from that. We still have the impression that scientists need to look like Einstein, in a white lab coat. Artists have got it made because they are much more accepted by the public than scientists are. If you talk to young people they would rather be Tracey Emin than they would a scientist. They could name half a dozen young artists; they couldn't name half a dozen young scientists...

It is important to get people to feel enthusiastic about science and as part of that it is important that scientists get a chance to be seen in this way [as creative collaborators]. Normally, our sense of scientists is that they are very dour people.

Related to the discussion of image, it was noted that Sciart projects had helped in a number of ways to achieve recognition for the work that scientists were involved in. That had happened in an interpersonal sense, through the dialogue and "intelligent curiosity" that the Sciart projects had prompted with collaborating artists. It also happened at a more public level through the exposure that some Sciart projects gave, through their outcomes, to the science that had informed them. That exposure helped to give scientists both a platform to promote and debate their interests and, in some instances, a certain professional cachet and kudos that had led to an enhanced self-image.

The fact that someone from outside their scientific discipline took an interest in their work was often very gratifying for the scientist. It was a very insular conversation that they were used to having, and it was always very nice when someone came along from outside of the tribe and took an interest...an intelligent curiosity...

It is definitely good for [us], in terms of the external perception of what we do, to have been involved in the project...that captures people's interest and makes them think about 'who are these people and what do they do?' We're pretty well embedded in [our] field, but when you have something like that which is not dull and academic it makes people look again and think 'oh they are really quite interesting after all'...

6.2 Scientists' involvement in public communication is enhanced

One very significant finding from the interviews was that their participation in Sciart projects was instrumental in encouraging scientists to be more confident in communicating their work to the public.

Sciart funding hasn't had an impact on the way that science works...But in terms of public understanding, it has certainly made a contribution. Scientists are now out there in public venues presenting art and science work. The scientists I have come across in this area have all gone on to do quite remarkable things within science communication. They were able to use the Sciart collaborations as a stepping-stone to create a space for themselves to get out into the public and talk about science. It created an amazing set of advocates for science and it gave them the training and the confidence to get out there. That is the legacy: that so many have gone on beyond their science and art collaborations to talk more about their science to the public.

The testimony of scientists who had been involved in Sciart projects provided numerous clear and concrete examples of how their attitude to, and/or their involvement in, communicating with the public had been positively affected.

It was a stepping-stone that allowed me to do things like become the Director of the Cheltenham Science Festival, or the telly stuff, or the radio stuff...Going to so many arts venues with X and talking about the work helped me to come out into the public arena...

It has been a complete catalyst to think differently about the images that I produce in my scientific work. I started to think much more creatively about how I could use those images to communicate with the general public...I can go about it now in a more confident way...

The real influence on my professional practice is to do with the business of how you engage people. That is a real focus in what I am doing now...and this [Sciart] project has made me think again about the ways in which you might do that...

Just having that experience on my CV means that there are more opportunities now. I have my stripes from having done an art-science collaboration, that means that people are much more likely to ask you to do these public engagement things.

For at least two of the 11 scientists interviewed as case study participants, their involvement in Sciart projects had been catalytic in encouraging them to reorient their career trajectory away from 'hard science' and towards the communication of science.

I have come to realise that what I like in science is having a more superficial knowledge of a lot of things and being able to communicate that to lay people...and I have learned from this project how I might be able to do that more effectively...I have learned through this project that that is where my interest really lies; and that

might mean a career change for me, more into the area of public engagement. The project was a catalyst for me to begin to think quite seriously about that possibility...

My career is moving away from hard-end science and towards the mediation of science to achieve practical environmental outcomes...I was possibly going in that direction to a limited degree, but this project got me thinking far more about the role of using information rather than just producing it. I would previously have seen my role as being the sceptical scientist producing hard data. I don't think I saw my role as being to use that information to influence the way that people behave, whereas now I do.

Two of the case study scientists drew attention to the advantages that the arts have over the sciences in terms of encouraging an active participation on the part of the audience. Because of this, Sciart projects were seen as being more in line with the 'public engagement' rather than the 'public understanding' model of science communication.

I did already work on public engagement type projects, but focused solely on the straightforward 'expert' model of science: you are there to teach people or to pass on your knowledge, rather than to get people involved. It is a very different type of engagement, which is I think one of the powerful things about art-science projects. It's about making people curious, rather than giving people knowledge...

It is actually quite difficult to engage people in science. It is perceived as being hard: you need lots of knowledge, and it's quite scary stuff...Science is more associated with work, as an applied activity, and wouldn't be seen as something to do for leisure or enjoyment...Maybe it comes down to the 'doing' bit; there are far more people out there who consider themselves capable of doing art at some level...I think that the arts are a long way ahead. In science education projects there are always some kinds of arts activities involved. Often there is no scientific component to the visitor experience, even at science-based attractions.

6.3 Sciart projects help scientists to gain a different perspective on their work

One other important effect of Sciart projects, mentioned both by a significant number of external experts and by the scientists themselves, was that it helped in some cases to restore to scientists, and to make them reconsider, their sense of the bigger picture within which their work was taking place.

Scientists are conflicted, ambivalent; they describe how they do their science in a strict way, but when you probe more they begin to soften it around the edges, and you find that the art is being used by the scientists to help them understand some of their ambivalences about their professional culture...

By going to clinics with a photographer it reminded him of what his work was actually about; namely people. The scientists talked about these insights not as a recreational side issue but as important to their own sense of professional identity. Scientists drew on the artists to adjust the way they saw themselves...

Some of the more interesting outcomes for the scientists were often to do with questioning their practices and ideas by having a different person coming into their space. Some of those benefits might be on quite an individual level and might influence things like how they might talk about their particular area of work to other people. So it might have been more to do with an altered perception of the context in which their work was taking place, or about the way that they might communicate what they do.

A high proportion of the scientists interviewed who had been involved in some way in Sciart projects made positive reference to the perspective-altering effects of their participation. In some cases the benefit had derived in part from the simple process of injecting a new point of view into the very closed professional world of the sciences.

It is absolutely necessary to have a scheme like that, that invites scientists to look at themselves and at what they do from a very different perspective. We can get very inward-looking; it can be a very closed community. There are very strict rules about how you do your work. The artists can allow other things to enter into your way of thinking...

These discussions are always extremely interesting as you see a completely different world. There is very little contact outside our little world here, even socially. I don't think I know anybody who doesn't have a PhD. We live in a strange world that is completely dominated by science...The collision of these worlds when it happens is not seen as hostile but as stimulating.

For some of the scientists, the Sciart encounters had made them more critically reflective about the activities that they were engaged in, and more aware of the heuristic limits that constrained their habits and practices of thinking.

I found it interesting to be put in that position of thinking about the extent to which knowledge is in itself determining the way that you view the world...

They [the artists] were prepared to embrace a much wider range of facts or evidence than is the case in science...They also had a much stronger historical sense. In science we are always looking-forward and we tend not to consult information from previous generations. So it made me think more about those sorts of issues and thought processes...The idea that you need to try to use all this information to make better sense of things.

For some, the insights gained from the Sciart encounters seemed to have the character of an epiphany, a moment of illumination that was to leave a profound impression on the recipient.

It was a bit like walking out into an area where there is very little light pollution on a clear night and just looking at the number and extent of the stars and saying 'that's really impressive'...It confirmed to me that art could be a great way of opening people's minds to an unfamiliar subject...

It was really about my personal, deep-level engagement with another discipline. And that has really affected the way I think about science, because X really made me think about the premises underlying my current methods.

Some of the artists who had worked with the scientists showed a keen awareness of the potential of their collaboration for prompting new insights in the scientists concerning their professional culture and practice.

I don't think that artists really challenge the scientists scientifically, but I think they challenge them about the purpose of their science and raise questions about different ways there might be of looking at their science and of presenting the outcomes...

Lots of scientists are very interested in the ramifications of what they do beyond just their data; they are interested in the philosophical and the cultural dimensions of where their science goes and what influence it has. They don't usually get to talk about that much, and they get incredibly excited when they can talk about it. That is an insight I have gained through the project. I think they like making connections between their science and people's lives, and I think my activity is a conduit for that.

As an element of the reflexive awareness that involvement in Sciart projects had sometimes helped to generate, a number of scientists testified to the fact that their involvement with artists had encouraged them to adopt a more speculative approach.

The conversations I had with artists were more wide-reaching than was possible with fellow scientists. Projects and questions were brought up that it was never going to be possible for science to address; therefore, they would never be brought up in a scientific context...

We asked the participants to reflect on their involvement, which was different from what I had done before. So there was an extra level of meta-reflection that wouldn't normally have been built into the scientific method...

He [a scientist] said that he didn't always know why he was meeting artists, or what it was that he was getting out of it, but the more he did it the more he did seem to get out of it, and that somehow it was managing to feed into his thinking. That kind of intangible value and speculative benefit is not something that scientists are often allowed to have; the benefit of their research has to be calculated and proven. Even gaining that acknowledgment that that alternative way of thinking exists was an important outcome for me.

The question 'why?' seemed to crop up recurrently with reference to the scientific mindset. The arts were perceived to be absolved from the responsibility of having to account for the question 'why?' and in some senses that was felt to be a liberating thing, meaning that artists could be more free-thinking in their speculations and less accountable to produce rationalised outcomes.

It was in an art gallery so you didn't have to ask 'why?' I think that a lot of the fear around science and its interaction with the public is that the main thing you are going to be asked is 'why are you doing this?' and it isn't enough to say 'because I find it interesting and I think that you might as well'. But that is perfectly OK in the realm of art.

To end this section, it seems worth re-emphasising that for a number of the scientists who were interviewed as part of the research there was no doubt that participation in Sciart projects had represented a significant milestone that had had profound and positive effects on either their career development or their personal and professional sense of self.

It has been highly significant in my working life, and I believe I would have been less the person that I am by missing out on this collaboration. So there are both personal and professional aspects to the value of our work together...

It has influenced my own thinking about the issue of public engagement in science; to the extent that I am now thinking about how that might become a much more important aspect of what I do professionally in the future...as a very serious aspect of my work, not just a secondary interest.

6.4 Scepticism among scientists towards arts–science collaborations

Although all of those representing the science field³⁵ who were interviewed for the research were positive about the value of Sciart and attested to its benefits both personally and for the professional culture of

³⁵ Of the total of interviews undertaken, 34 per cent were with scientists (16 out of 47). Approximately 25 per cent of interviewees were artists, approximately a third were scientists and the rest were other stakeholders such as gallery or museum curators, funders, Sciart assessors or other project-related individuals.

science, it was recognised that their views were not universally shared by colleagues in the field. In particular, there was a sense that art–science collaborations were regarded by some scientists as a bit of a ‘sideshow’, lacking any real or serious implications for the activity of science.

There is now a greater acceptance and practical support for collaboration and interdisciplinary activity within the mainstream than there was in the mid-90s, but I suspect there remains within the mainstream scientific community a suspicion that what has emerged is not ‘proper science’; that it may have some vestigial value in terms of the public engagement with science agenda, but as a proper scientific process it isn’t of particular value...

There was a sobering moment when Y was told ‘don’t put your Sciart activities on your science CV, other scientists won’t like it. It will look as though you have taken your eye off the science ball’. There remains a lot of scepticism in the science establishment. You will get scientists saying: ‘I enjoy working with artists as an individual but I don’t think it does anything for my science.’

Some interviewees believed that the unrealistic rhetoric that was felt to have accompanied the early publicity for the Sciart scheme, concerning the potential of art–science collaborations to have a transformative influence on the culture of science, had contributed to a reported residual sense of scepticism.

There does remain a degree of scepticism in the science field more generally...Partly because of the overoptimistic claims made at the beginning. It was one of the relatively naive hopes of the scheme that the introduction of scientists into a collaborative process with artists would enable the scientist to make more intuitive and imaginative leaps in their own research, but I don’t think in practice that there is much evidence for that...

Part of the rhetoric of Sciart reflected the desire to encourage more leaps. In practice life is not like that: an Einstein comes along when an Einstein comes along, and we aren’t going to get more Einsteins simply because more scientists are working with artists...Some of the residual scepticism within the scientific community comes, I think, from the failure of that initial aspiration.

6.4.1 Science–arts collaborations: professional barriers and disincentives

A high proportion of the scientists alluded to professional barriers and considerations that might hamper the involvement of scientists in Sciart projects. The main issues identified were the demands on time, and the sense that working with artists represents a distraction from the proper business of being a scientist.

It was very expensive on my time, and that is the main limiting factor in me being able to be involved again in this type of project...It was an interesting but temporary distraction from my main job of being a scientist. This was yet another thing competing from my time, and I can’t afford to do this sort of thing too much or too often...

From the science point of view, being involved in arts projects and activities has very little input or standing in terms of the RAE [Research Assessment Exercise], which is not, I think, the case for the artists...For a scientist like me, this is considered as an offshoot. I should be writing my grant application for £100 000, I should not be devoting my time to peripheral arts initiatives...

It can be a career disadvantage for scientists to be seen to participate in public engagement activities. Most scientists I’ve spoken to have said that they are positively discouraged internally, by their colleagues, from taking part in any type of public engagement or public understanding activities. They are just not seen as

career-progressing. They can sometimes be seen more positively by the directors of scientific institutes, or their PR people, but that is the exception.

There was a view that although the idea of 'the public engagement in science' was gaining ground within the professional culture of the sciences and that working with artists represented a legitimate way of taking forward that agenda, public engagement activities were still nevertheless seen as a marginal thing and they were not generally properly supported or resourced.

There is a lot of talk about public engagement in science, but generally with very little money behind it. And there is an unrealistic perception of what scientists are able to achieve without them having the necessary amounts of money or support. There is a lot of lip service paid to it, but really it is all about how many grants you have got, or how many papers you have done. This Wellcome Trust scheme does enable scientists to put in some time on it, but to really do it properly it really is expensive in terms of your time, and that needs to be considered if the idea is to engage more scientists in this.

In the focus group discussion, the issue of time was mentioned by the artist participants as a limiting factor for both the artists and the scientists collaborating on Sciart projects. In particular, they highlighted a lack of time for shared planning, project evaluation, reporting and quality assurance. The focus group artists noted that it had often been a challenge to get sufficient time with their science partners. It was argued also that the funding received was not sufficient to allow time to conduct the work, communicate the work, and build and sustain networks around the work. All the artists reported having to give considerable additional in-kind support in terms of their time to bring the project to fruition.

For one focus group artist, however, time had been the main benefit of the funding from the Wellcome Trust:

The award brought me time not people. It opened the door, but it was not a collaboration. It was not a real collaboration. [The scientists] gave me a bunch of data and I did things with it. Then at the end, I went back and presented the work to them. That was the extent of the collaboration.

According to the interview evidence, a further perceived barrier to scientists choosing to engage in art–science projects was the perception held of art itself, which was felt still to be an alien or problematic concept for some scientists to embrace.

I think that the 'A' word can sometimes be a block... You would be talking about something in an interesting way with a scientist but as soon as you talk about it in terms of art they can close down and not want to talk about it any more. There are these preconceived ideas about what art is and what art should be, and to be fair the same is probably true about science. We have a tendency generally just to want to stick to our own thing. That X's project wasn't too explicitly about art made it more approachable for the scientists.

A number of interviewees commented upon the fact that they did not believe that scientists, as a professional community, had the same sense of what might be possible in art–science collaborations as artists and others in the arts world had. There was a view that scientists en masse had a tendency to view the potential of art in a reductive way, as something that at best might provide a decorative means of illustrating the outcomes of their research in ways that might be more palatable to the wider public.

A lot of scientists have engaged with artists on the basis of a limited assumption about what artists can do: that is, paint your data, or dance your data. They have a limited 'common sense' understanding of how artists work and of how they can work collaboratively with other disciplines.

As an example of how artists might do more than just “dance your data”, both artists and scientists who had participated in Sciart projects felt that one of the benefits that science could gain from an engagement with art was that the latter was able to contribute perspectives and dimensions to scientific work that elevated it from the mechanistic and/or reductively analytic activity that it was sometimes perceived as being.

The way that the arts and sciences work is different. The natural default of an experimental scientist is to go down a level; to say ‘OK, we have this wonderful phenomenon the dawn chorus how can we unpick it?’ And the artist’s approach was to say ‘OK, we have this wonderful phenomenon how can we make more people know about it?’...

(Scientist)

Scientists do not often get involved in the moral and the aesthetic. They tend only to be interested in how something works. In a way that is a limited view of the world. We were trying to take the ‘how something works’ question and to add a moral and political dimension to it.

(Artist)

6.5 The creative contribution of scientists

Several issues arose from the interviews pertaining to the creative contribution made by scientists to Sciart projects. It became clear, for example, that in a high proportion of the case study projects examined scientists had had some kind of creative input that had not been foreseen at the outset of the collaboration. For instance: several scientists had acted on camera with professional actors; on a film project, two scientists had coached experienced professional actors in how to play their roles; one scientist had contributed the soundtrack to a highly acclaimed artist’s film; one scientist had exhibited photographs as artworks as part of a touring exhibition; and one scientist had worked with an artist to develop an original explorative drawing technique. The level and value of the scientists’ creative input often came as a surprise to the collaborating artists.

That one of the scientists should become creatively productive in the project was an unforeseen development...Y produced the soundtrack of the film. I had no idea that the scientist might be a creative contributor. But in general the artistic creativity of the scientists was surprising to me; as in their offices looking like creatively chaotic sculpture studios. I thought that they were an astonishingly inventive group of people. I guess that is what they were really: inventors...

[An actress] fed back directly on how fabulous and useful their input had been...it was unexpected: that there would be a [scientist’s] input at that filming stage. Often, to bring a third party in at that stage might be to risk interfering with things. But both [the director] and the actors felt that was a really useful contribution.

However, certain difficulties were reported regarding the creative contribution of scientists. In one instance the scientist (a medical professional who also had a parallel identity as a creative practitioner in his own right) felt that his creativity was not allowed full expression in the project, and that had led to a sense of frustration.

Tricky from the artists’ point of view was that I wouldn’t just stay in my scientist’s box...It might have been simpler for the project if I had just played a clinical, instrumental role, but I don’t think I was ever really interested in doing that. I was angling for a more active participation in the whole concept. I just don’t know in the end whether they saw me in that way: as one of the artists...I was there to supply what they needed, and

they would do what they wanted to do. I think maybe I had delusions of grandeur; I wanted to be a contemporary artist.

This was an isolated example, however, and in general it seemed that the lines that demarcated the contribution of the scientists to the creative process had tended to be clearly drawn, to the mutual satisfaction of both parties.

A problematic issue that had a wider resonance concerned the way that the creative contributions of the scientists were acknowledged when the artistic outcomes came to be presented. In some instances this was felt to have been unsatisfactory, and it was suggested that the Trust could conceivably play a role in ensuring that the contribution that the scientists had made to projects was more fully visible to the public.

In one collaboration with an artist, I said that I wanted to have my name recognised on the final artistic product. The artist went back to their agent and he said 'if you put your scientist's name on the work it would devalue the artwork'. Therein lies a problem for collaborative art and science projects. If the art world can't accept that it is truly collaborative then it will not be allowed into certain parts of the arts infrastructure, because among other things art is a commodity...

Perhaps the scientists weren't always fully acknowledged for their work, and that wasn't protected by the Wellcome. It's as though the artist has done it all when that was just not the case. The Wellcome Trust could have been very helpful in brokering those arrangements so that the scientists were properly acknowledged.

One scientist whose creativity was fully articulated in the final outcome of his Sciart project said that his experience of collaboration had led him to the view that scientists could – with relative ease – inhabit the role of artist, whereas it would be much more difficult for artists to reciprocate.

It does allow scientists to be artists at some level, whereas I think that going in the opposite direction is more tricky. That is to do with the way that a scientist is developed. It requires a huge amount of background knowledge, and resources that are just not available to someone who is just starting out as a scientist. But anyone could pick up a camera.

This however appeared to be a minority view and a greater number of the scientists attested to being impressed by the unforeseen levels of complexity and of organised professionalism that they had observed to be part of the artist's role. For most of the scientists 'being an artist' was not an issue; it seemed sufficient just for there to be a chance that some of the creativity that they valued in their artist collaborator might filter through into their own work in some way.

A key thing for a scientist like me, at my career stage, is keeping your creativity alive. And the more you can work with young and creative people, the more you are able to do that.

Chapter 7: Collaboration – what happens when the ‘two cultures’ come together?

- Sciart had helped more closely to connect the cultures of art and science.
- Collaborations were most successful where the integrity of art and of science was maintained.
- Artists initiated and drove the majority of Sciart projects.
- Establishing a genuine rapport across disciplines can take considerable time.
- Artists and scientists may see the same problem or experience with quite distinct and different gazes; this can be both a benefit and a challenge.
- Factors can be identified that tend to characterise successful collaborations.
- Many collaborations have been successfully maintained and extended beyond the period of the Sciart project.

In a really successful Sciart project both the artist and the scientists are never the same again; their thinking process will have changed for the better, and it will never be the same again. But even in the ones that aren't in what I call the exemplary category, the individual artists and scientists will have learned an awful lot that will be reapplicable to other projects that they subsequently get involved in.
(Expert commentator)

7.1 Recognising and accentuating connections between the ‘two cultures’

The interview evidence suggested that the collaborations and relationships between artists and scientists that Sciart had supported had helped to raise awareness – within both project participants and the wider public – of connections that had previously been thought either not to have existed, or else to have been lost, between aspects of the arts and of the sciences. An effect of this had been to encourage, at the levels of policy making and funding, more interest to be taken and more resources to be devoted to encouraging interactions between the two.

Connecting the sensory with the conceptual is something that is fundamental to artistic and scientific method. That awareness has got lost at a public level. And Sciart collaborations and the publicly visible outcomes help to demonstrate those connections, which have tended to become overlooked...

Sciart has made more manifest the similarities between science and art; it helped to reinstate a lost line between the two. There are definitely many more projects happening in this area now. As well as more activity, there is more interest at both a public and a policy level and more money is being invested in it...I've heard of more grants from scientific research councils that contain a cultural or artistic dimension. As a result, scientists are also seeing their work more in terms of the broader culture, in which the arts are, historically, seen as a bigger player.

Interviews with a significant number of both artists and scientists who had participated in Sciart-funded projects revealed that the process of collaboration and of observing at close quarters each other's professional practices and cultures had led to previously unremarked similarities between the 'two cultures' being recognised. The process of recognition provided a point of familiarity that generally seemed to function as an encouragement or reassurance to those concerned. The combination of strangeness and familiarity was perceived by some as a fruitful basis on which to engage in cross-disciplinary collaboration.

Scientists' testimonies:

It has made me think more about the coming together of art and science. At the centre of scientific and artistic thinking there are acts of creativity, and I don't think that those acts of creativity necessarily differ, although the content may differ. In designing an experiment, a thought will come to you that 'something is worth looking at, and I have to be able to recognise what is the value within that'. I think that that is the same with the artistic process. There is the general idea and then the method to arrive at or express it; in my case that is an experiment. If you work together with an artist you begin to realise and to experience that there are these similarities...that was quite a revelation...

I have a better understating of the similarities of the aims of art and of science; that it is a process of debate and ongoing discussion, and it is not just a process of creating objects...

There are obviously social distinctions and personality distinctions: you go through a different door to work, and you wear your hair differently and those sorts of things. But at root they are equally creative and equally imaginative...I think art can be very objective and science can be very subjective. I was interested in seeing those kinds of similarities exposed.

There are surprising parallels with being a scientist. You spend a lot of time getting funding and writing reports, and only a small proportion doing the actual science. Each grant is for time-limited funding, so like the artists we are always thinking about where the next batch of money is going to come from.

Artists' testimonies:

I was intrigued by the radical differences between the artistic process and the scientific method, but also by the overlaps, such as the opening up of new ideas; the creative manipulation of materials; and the process of experimentation. Both science and art require creative thinking in their own ways, and they both require observation of the natural world. As an artist, as well as a scientist, you also need to be an attentive observer, and to pay attention to detail. There seems to be a lot in common but also a lot that is very different, and that seemed like a nice basis to form new relationships on...

The main thing is the similarities not the differences. You spend 75 per cent of your time applying for funding, and 20 per cent writing reports, and just 5 per cent actually doing the work. That is the same in both fields. Also there is that commercial lure in science to make money by working on cures for things like obesity and baldness, which means that if you remain within the academic research you effectively take a pay cut to do that. That is the same in the art world as well. The people who are making money are making it with very commercially based artwork. Dealers don't particularly want to work with artists who make work about illness.

It was very clear from the testimonies of interviewees from both sides of the art-science divide, and from those participating in projects as well as those observing them, that a great deal of mutual respect between the 'two cultures' had grown up as a consequence of Sciart-funded collaborations.

I've seen plenty of evidence that artists and scientists now view each other's cultures differently. There is a lot of anecdotal evidence of scientists being astonished by the level of both craftsmanship and hard labour that goes into the creation of artwork, and similarly a degree of astonishment amongst the artists about the ability and excitement of scientists in dealing with ideas and with imaginative concepts. So, there was I think a process of mutual eye-opening...
(Scientist)

A strength is that it has enabled people from both sides of the Sciart divide to gain access to different ways of doing things, and that it has begun to break down some of the prejudices in the two camps.
(Arts expert)

In the remainder of this chapter, different aspects of the Sciart collaborative experience that were identified and commented on by several different interviewees (some of which might appear contradictory) are clustered together under a series of themed headings.

7.2 Maintaining the integrity of disciplines

While recognising that there were connections between the 'two cultures', a number of interviewees stressed the importance of artists and scientists being able to benefit from the opportunity to collaborate without feeling pressure to compromise or dilute the distinctiveness of their own professional discipline.

For me, the importance of any interdisciplinary activity is that you can let an artist be an artist and let a scientist be a scientist; that division, of keeping them in their places, is actually more productive because they are separate fields of knowledge. They can inform each other, but I don't think that they often truly blend. That can be a misleading aim...

It [Sciart] should only support projects that have an ability to stand up in the realm of art, independently of the relationship with science, and vice versa...As soon as you depart from that you get watered-down science and watered-down art, and that is not what it set out to do...

Art is not translating science, and science is not translating art; they are two separate things that have their own languages. They are introducing ideas through a new prism of language. Sciart does not fund proposals where the art is illustrating the science because that is not about collaboration. It is looking at difficult questions that both science and art are asking, and looking at how the two can aid each other in moving things forward.

For one artist, the fact that the specificities of his own discipline were accentuated to him as a result of his Sciart collaboration was an important and valuable outcome.

Producing things that are valid within their own discipline has become important in my practice, and this Sciart process helped me to clarify my own ideas in this area; to give me a case study, if you like, to refer to. It has taught me that you need to look for validation within your own subject practice, not to seek elsewhere for that validation. If you're looking for what is transferable from Sciart: for us it has been an understanding that our own practices are only strengthened by the validation of peers in our own disciplines. So, rather than building a synthetic third position, we actually maintained our very discrete disciplines, but shared a method...We weren't trying to conform our respective practices...

7.2.1 'Two cultures', two frames of reference

Sciart project participants noted that significant differences of culture do exist between the worlds of art and science. In some cases this had led to a sense that barriers of communication or of method had been reached. However, the inability to surmount these barriers, although sometimes frustrating, was not necessarily regarded as a sign that the collaboration had failed.

There seemed to be an inability to meet and to have set terms of reference that can allow you equally to be part of the discussion. You realise as you go on that you are almost in sort of parallel existences, and that it would probably take years and years of hard work to develop a common field of discussion that was really, really genuine...We were not ultimately to arrive at a common point of understanding...As an artist, I think it is easier to stay in that fluid exploratory stage than it is as a scientist. There is a point where scientists want to become incredibly concrete and work with absolutes...

As an artist, you are not thinking of a very specific outcome because you are trying to build up layers of meaning and layers of interpretation, and that does not lead to producing things that are necessarily easily measurable, and so it was hard for us to define the indicators we were looking for in terms that Y could develop tests for. So we ended up with all these dead-end conversations about the testing. But that is all part of the process, I suppose.

Underpinning the challenge to collaborate was the awareness that the assumptions upon which the respective disciplines were founded were profoundly alien to each other. This could on occasion present an insurmountable barrier, but on other instances it provided a means and a spur for self-evaluation, which was seen as a productive outcome.

The difference from working with a[nother] scientist was, primarily, the lack of shared assumptions, about most things, which was a source of both frustration and, ultimately, of achievement. When I talk to a scientist I don't have to talk about basic elements of the scientific method, and of the sort of generic background knowledge that it is assumed that we share...lots of our conversations were about us teaching each other: about things that we didn't realise we needed teaching about; or about things that we didn't realise that the other person wouldn't know...

The assumptions we had about our own disciplines were unsettled. It was possible to expose our assumptions and to have a moment of recognition where we could maybe perceive where the limit of our understanding lies. I'm interested in this notion of collaboration reinforcing the boundaries, rather than dissolving them. I gained a new recognition of what art practice was. I found that it was necessary to go outside your own discipline to discover what defines its limits and its practices.

One interesting insight to emerge from the interviews was the perception that there are roles and rituals that artists and scientists as a profession tend to adopt, probably without even being aware that this is the case. In an anthropological sense, there are ways in which the two professions appear quite tribal in their behaviour. In some cases the effect of professional role conformity could be limiting. However, in instances where it became possible to adopt the conventions of the opposite tribe it could turn out to be one of the pleasures of participating in the collaboration.

Because I was the scientist and they were the artists, I ended up defending science and they ended up defending art. And I didn't even believe in what I was arguing for, but once you start having that argument you tend to just fall into those roles...it was really odd how in the end you tend to conform according to what kind of door you come out of in the morning. There are these subliminal institutionalised positions that you tend to adopt, even against what might be your better judgement...you take on those roles and then you end

up living those roles. When I was a doctor I used to read the Times and now as an actor I read the Guardian, but nothing about me has really changed; I've just ended up following those roles...

Scientists shake hands, artists hug each other; to take a little bit of that away was just an absolute joy.

7.2.2 Looking differently at the same material

Some interviewees defined the benefit of collaboration to be the opportunity for individuals from different professional backgrounds and knowledge perspectives to bring their expertise to bear on the same object of scrutiny, which provided the context for a heuristic dialogue to occur.

What worked best for the individuals involved was meeting each other and exchanging views, which allowed, especially the scientists, the chance to look differently at the same material...

Y is a very articulate user of scientific thought and language and I am an artist, and the language we use is different but there is a very strong correlation between our areas of interest; about thinking about how memory might find expression as well as understanding. The drawings provide a space where we are both articulate and where we can explore together aspects of memory. It's a way of finding another language.

In the focus group, the artists concurred that artists and scientists do tend to think differently, but that when these views were combined through collaborative projects, new ways of seeing and recording could emerge. This reciprocal exchange of thought processes was exemplified through a comment by a film maker:

Professor Y was collaborating on a film...He is a neurosurgeon of great standing. Making this film has changed the way, as an artist, I see. It has changed the way I think because I have learnt that what's out there isn't the same as what we see in our brain...Artists observe differently to scientists. Artists notice things scientists don't.

Sometimes similar-sounding concepts were found to have decidedly different meanings as applied in the arts and the sciences. A sense of difference was noted by a number of artists and scientists with reference to the approach of the respective cultures to ideas and conventions concerning experimentation.

My understanding of experimentation has been influenced by the project. Just meeting more people and talking about the subject has given me more insight into the differences between scientific and non-scientific experimental processes...In science you repeat an experiment to prove a hypothesis; in art proving the hypothesis is secondary, the main rationale is to reproduce the experiment and to see how the context affects the outcome. It's about finding out about the differences of context in the act of reproducing an experiment, rather than about repeating the results...
(Artist's comment)

When 'clinical trial' was the terminology used we went into scientist mode and started to think about those dimensions of the experiment. Had it been proposed as a social event we would have thought of it in that context, but we approached it instead from a scientific perspective, which we were compelled to do...We thought of it in a scientific context but of course it had no scientific purpose or outcome...The inability of the two sides to communicate was striking.
(Scientist's comment)

Scientists don't look for the unexpected or things beyond the framework of their study. Artists do. Artists can go beyond the limits of experiments.
(Artist's comment)

7.3 Artists making the running

There was a perception among a majority of interviewees that artists were the ones who had initiated and driven the Sciart projects. As an explanation for this, it was suggested that scientists found it difficult to justify the Sciart collaborations in terms that would make sense within their professional culture.

The reality was that in most cases the artists did the running. The scientists didn't need the money as they were academics on a salary. The artists pushed it through, and it was the artists who produced the work, with the scientists in some sense acting as patrons. I really felt going in that it was an inspirational opportunity for artists and scientists to work together as equals. I thought that was what would happen, but it didn't prove to be the case...

I didn't think that the driving vision of artists and scientists working together on common problems was the reality. They may have shared an interest in ideas, but in most projects the artist seemed to take a lead on an idea which was then patronised or sponsored by the scientist. There was conversation and interaction, but I can't honestly say that I saw many synergies...

The artists always felt they were the lead partners; they would initiate the funding side and be the lead force. They definitely got a lot out of it and had usually gone on to do other related projects. So if you viewed it as seed funding, it was brilliant. The medics were fascinated by the way the artists worked, but would not necessarily initiate future projects themselves, though would be open to future approaches from artists...

One reason for this inequality of interest might be the professional culture of the scientists. They are judged (in terms of the RAE, for example) by the articles they publish, and there was nothing for them to gain professionally from their interactions with the artists. Writing a paper based on their Sciart collaboration would not gain them professional kudos; it was seen, professionally, as a quite a marginal thing.

In the focus group, the artists concurred that it was the artists who largely drove Sciart projects. Despite the responsibility for the project delivery resting with the artists, however, it appeared that the scientists still had a strong voice in relation to the process.

The artist is responsible for the end product...the scientists are so busy...

Scientists are very busy people and it's hard because they don't want to collaborate. It's not collaboration, it's a relationship. It takes science to a new and different audience. But it's not equal; the scientist has the final veto...They hold the power to pull the plug. They have to be moral, truthful and honest.

In the focus group discussion, the balance of power within science and arts partnerships was clearly considered to be an important issue in determining the success and long-term impact of a collaboration. In some cases, it was reported that issues of control had remained unresolved. One focus group respondent asked the question: "Who is really in control in Sciart – the arts or the science?" While this was a generalised question, it reflected a deeper concern about the comparative value and contribution of the respective disciplines in science and arts collaborations.

The discussion of management and control provoked lively focus group discussion. In all cases, the artists felt that it had been their initiative that generated the proposal and the overall mission. They also had also

been proactive in getting the scientists to engage in the project. The focus group could not recall any project that was generated by a scientist who had then got an artist on board. Despite this somewhat 'one-sided' start to the project, in most cases, the artists had been able to encourage the scientists to become more interested in the project. This tended to result in a number of challenges as an inherent part of the 'coming-together' process. These challenges notwithstanding, over time, the initial mission tended to evolve into a more collaborative process of common target setting. The choice of methods tended also to be more collaboratively negotiated and this shared process was often quite essential to the successful realisation of the project. One focus group respondent observed: "Partnerships involve a huge element of trust."

The importance of a shared process was evident in the need to share materials, resources, facilities, knowledge and/or technology. Both scientists and artists had given intellectual skills and understanding to the projects in addition to sharing more tangible resources. There was also some evidence that this interchange of resources and ideas had led to the development of new ways of working, innovative use of technology, and a more creative use of facilities and resources.

The focus group suggested a number of practical management 'tools' that could be employed to encourage more successful partnerships. For example, clear strategies could be in place at the outset for ways to resolve conflicts. It was also suggested that cooperation agreements or memorandums of understanding might be beneficial. The respondents also pointed to a number of legal and organisational constraints encountered in the process of working across science and art. These included aspects such as ethics, health and safety, and data protection. It is reasonable to say that such conflicts are not specific to 'science and art' per se and would be likely in any sort of partnership work across disciplines or across organisations. To exemplify these issues, one respondent reported a project involving twins. In this instance, the artist was basing the artwork around data collected about twins during a longitudinal study over a number of years. The research subjects and their parents had given permission for the data collected to be used for scientific purposes, but not as a part of an arts project. Similarly, the ethical clearance given had related to publication in scientific journal not in an art gallery, so the collaboration had necessitated both internal and external discussions of ethics and of the boundaries of investigation. Clearly such discussions are challenging, but it could also be argued that these negotiations at the 'edge' of projects add real value in terms of shared learning. As one focus group artist noted: "It is the questions we ask each other that are the most valuable". To initiate this conversation, it requires that the artists and the scientists need to develop a shared vocabulary. It was suggested that both disciplines – art and science – are guilty of having inaccessible vocabulary and ways of communicating: "The vocabulary we use – artists and scientists – are both guilty of that; precise words hiding our ignorance."

7.4 A "puzzled engagement", but a two-way benefit

The expression "a puzzled engagement", used by one expert commentator from the science field, seems to sum up the general sense given by interviewees of the character of scientist–artist interactions, emphasising a degree of bafflement that was nonetheless compensated for by the challenge and pleasure that usually seemed to be derived from the encounter.

There was a clear sense that artists gained a great deal from these interactions, in ways that would be influential upon and traceable within their future artistic practice. There was an equal sense that it was more difficult to make claims for the direct and ongoing benefits to the scientists involved, though it was

strongly felt that benefits of a more indirect and perhaps intangible nature did result, which were more to do with the way that scientists *communicate* their activity, rather than with the way that they *practise* it.

From what I have observed, there is a kind of puzzled engagement between the artist and the scientist. With the scientist intrigued and puzzled by it and the artist intrigued but excited. And that can often be a life-enhancing encounter for them both. But I haven't seen any evidence that it has had a transformative impact on the science...

This scheme was particularly good in that it clearly has had an ongoing effect on the practice of the artists involved. It was in effect seed funding, and actually those artists have gone on to explore those themes further, and may themselves have discovered as a result a new technique or process. So there has been a sustained impact on the artists. The scientists are different in that they testified to a shift in perception as a result of their engagement, but it has not necessarily had a tangible impact on their scientific method or clinical practice...

As well as there being much merit to the finished product in many instances, there is also an enormous value to the collaborations and relationships that were developed. A surprising number of the scientists have benefited as well as the artists, certainly as individuals. It would be hard to say that their science altered, though I have heard a few say that it changed the way they thought about their science.

The benefits of the art–science exchange are succinctly encapsulated in the following comment, by an arts expert interviewee, which emphasises the value of access to knowledge on the part of the artists and the value of altered or expanded perception on the part of the scientists:

What happened in many instances was that the scientists had their minds opened to things that they had not been opened to previously. And the artists embarked on some skilling-up process, through getting information from their scientist partners, and maybe also through access to research groups and facilities that they would not have had access to otherwise.

The findings of the survey conducted as part of the evaluation suggested that involvement in science-and-arts-related projects had helped scientists to change their minds about the value and nature of the arts. For example, 59 per cent of scientists either agreed or agreed strongly that being involved in a Sciart project had ‘challenged their thinking about art’, compared with 30 per cent of scientists who felt it had not challenged their views (‘tend to disagree’ 18 per cent and ‘strongly disagree’ 12 per cent). Conversely, though, the scientists felt less sure whether involvement in a Sciart project had challenged their views about science: 50 per cent said their views of science had not been challenged (‘tend to disagree’ 25 per cent and ‘strongly disagree’ 25 per cent) whereas only 41 per cent felt they had been challenged (see figures 5 and 6). These figures suggest that – from the scientists’ view – Sciart projects helped them to be challenged by art but were less challenging of their perceptions about science. This finding appears to challenge somewhat a suggestion that emerged strongly from the interview evidence: that Sciart collaborations had often made scientists adopt new perspectives on their own professional activity.

If we look at this same issue from the viewpoint of the artists, the results are quite similar, though there is a larger ‘undecided’ section among artists (20 per cent), indicating that they perhaps have yet to decide the ultimate effects of their collaboration. The artists, in common with the scientists, felt less challenged in their own discipline, with 42 per cent feeling they were not challenged in their thinking about art. In terms of their thinking about science, 50 per cent of artists said that they were challenged (‘strongly agree’ 23 per cent and ‘tend to agree’ 27 per cent), compared to 30 per cent who said they were not (‘tend to disagree’ 28 per cent) and ‘strongly disagree’ 12 per cent). It can be concluded from these data that Sciart

projects tend to be most challenging in terms of the understanding and enlightenment it brings to the *other* discipline rather than the enlightenment it may bring to one's own. It should be noted that the categories of 'artist' and 'scientist' were not mutually exclusive, with a small number of respondents nominating themselves both as artists and scientists.

Figure 5: Challenges to thinking about art

Project participants on 'participating in a Sciart project has challenged my thinking about art', % (scientists in purple, artists in blue)

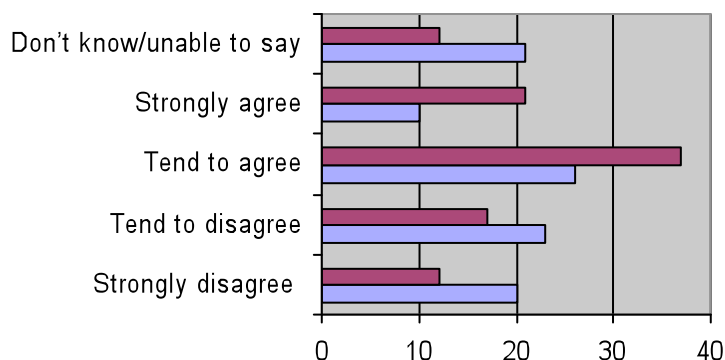
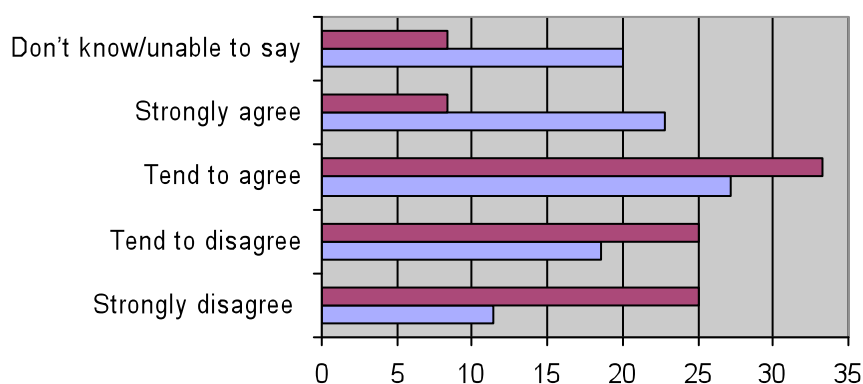


Figure 6: Challenges to thinking about science

Project participants on 'participating in a Sciart project has challenged my thinking about science', % (scientists in purple, artists in blue)



7.5 Degrees and models of collaboration

It was generally understood that the ideal collaborative scenario would be for both parties to be equally engaged in the project and that their mutual input would lead to outcomes that would be inconceivable without the input of the other. In reality (for the reasons suggested elsewhere in the report, such as the limitations of time, resources available and professional motivation), this was always going to be a challenge to achieve. Nevertheless, out of the ten Sciart case study projects investigated, three had involved very close collaborations in which there was felt to be a high level of mutual commitment and input and a sense that some kind of parity had been achieved in terms of the outcomes or benefits that had resulted.

The collaborative ideal as expressed in the abstract was summed up thus by the expert observers:

The programme funded genuine collaboration, bringing individuals to do something new that they could not have done without the interaction with each other...

We identified the principle that each must enter the other's territory. It is no good, if this is to happen, for the artists to go to the scientist and say 'I've got an idea can you help me with it?', or vice versa. That wasn't a Sciart idea. It wasn't a case of replicating the artists-in-residence in a science institute idea. It was the idea of them coming together as equals with a blank sheet of paper in front of them. For it to be an idea which is sustainable over a period of years, you really have to come together in a more collaborative and open way.

It was suggested that Sciart was different from other funding schemes that encouraged collaboration in that it did genuinely appear to place an emphasis on parity between the participants.

There had been other funding programmes where artists were encouraged to draw on the work of science, but this was the first time that there was this absolute insistence that the one must enter the territory of the other. The mindset was that it must be both...

I'd been an adjudicator for AHRC science-art fellowship proposals, and I could see that there were assumptions about the relationship between science and art that were underpinning those applications; mostly, the requirement that there would be a lead researcher from either one discipline or the other, which would pull the research towards one discipline or another, and would tend to produce unequal collaborations. So, for example, a scientist would ask an artist to make some kind of interpretation of their data, and one discipline would thereby be slave to the other.

Translated into the terms of the actual case study projects, the following comments (made by both artists and scientists) indicate how the ideal of mutuality actually played out in some of the more genuinely collaborative encounters.

Our aim from the beginning was to achieve a mutuality of input and outcome. It was a project that we would develop together and that would be satisfactory to us both, both within our own fields and mutually, as a collaboration...It would be a product that could go equally to the art world and to the science world and to the general world and that it wouldn't have to alter apart from the way it was framed. It would be a multi-platform sort of thing that we could take to each of these different settings...

We looked for parity, and for where within the research process that parity might lie. We decided, over time, that it was the development of a research method that could be translated into either discipline that we were most interested to achieve. It was important for us not just to take data from one discipline and import it into another. It wasn't just about data or knowledge transfer; it was about building a tool together that we could equally utilise to develop our respective knowledge...

X and I decided that we wanted to do something that would be valid in both of our fields, which turned out to be very hard work. There are a lot Sciart projects where the artist will simply interpret the scientific data, or else the scientist will simply study an aspect of the creative process. That can be interesting, but they are not collaborative projects in the sense that they create something that is equally valid in both fields. That's what turned out to be the hardest thing, but also the most rewarding...

Y doesn't ever patronise by oversimplifying his concepts or theories. In discussion, he maintains a sense of complexity and finds the means to articulate that...He functions as a collaborator in multiple ways: as an

expert, as a sounding-board for things, as someone who could challenge certain preconceptions; he definitely also contributed his own thoughts and ideas.

It was stressed by a number of interviewees that for truly meaningful collaboration to occur between artists and scientists a lengthy period of familiarisation and exchange was needed. The benefits of this were apparent to those who had witnessed the process develop and had seen the outcomes.

It was a highly experimental thing to put an artist and a scientist together. The first two and a half of the four years I spent working on [the project] I was just trying to develop the language to understand what the artist was saying. It's a really, really difficult thing to do...C P Snow was right: there are 'two cultures'. Sciart was right to try to bring them together, but it does reflect that this was a significant challenge...

The project stood out due to its slow development over a period of years. That was important in the sense that X had the opportunity to work with her collaborator on an ongoing basis. There wasn't a clear outcome at the beginning of the project and it went through a long research and then production phase, and that really gave X the opportunity to explore this subject in quite an in-depth way. For some of the projects that durational element has an important bearing on their success as it allows the collaboration to develop organically and that influences the way in which the work develops...

The previous collaboration we had on an art-science project had frustrations within it, in that both the nature of the piece and the time in which it had to be made did not encourage anything more than superficial and sometimes kind of slightly suspicious relationships...It has been a good learning experience for me: that with the right people, the right framework and the right time expended on those relationships, they can develop into real and significant ones, and not just end in a kind of fly-by-night meeting of minds which seems superficially attractive. This one feels like it really rests on very very solid ground.

Where Sciart funding had allowed an extended period of collaboration to occur, the impact on the parties involved had sometimes been very profound.

The fact that we have developed a real and ongoing working relationship is a fantastic achievement. It is as close as any that I have had within any other working colleague...

A significant success, one that will influence us both for the rest of our lives, is the knowledge that it is possible to have a working relationship with someone outside of your own discipline that can be incredibly rewarding and creative. I would rate that outcome more highly, I think, than the more tangible outputs...

I have no doubt that there was a fundamental change to my personality and my working method as a result of the Sciart project. I get up and look at the world differently because of the experience that I had; and it has fundamentally changed my working practice. Therefore the science and art projects can't just be judged by the quality of the final products because the process of the engagement in the collaboration is far longer-lived, from my personal perspective, than the end product...I would never have had the opportunity to step into another person's culture. Nor did I realise just how much I had missed by being embedded in science. That is where the Sciart funding has had the greatest impact, but that is not really quantifiable.

In at least one project where there had been extensive, mutually committed collaboration it had been possible to identify a defining moment where the boundaries between the two disciplines appeared to be surmounted and there was a giddy sense of crossing over into the other world.

I was asking endlessly 'Why?', which is what I do as a scientist. There came a point where he too started asking me 'Why do you think that this should be there?' At that moment our whole worlds were switched around. X had started taking that scientific approach, of questioning his own work, and conversely I had

started to work more by intuition and was a lot happier not to ask the question 'Why?' That was the point at which the sense of true collaboration really became manifest and the two worlds crossed over. It took three years to arrive at that point. He had become the scientist and I'd become the artist.

A significant number of both project participants and expert observers commented on the importance of personal 'chemistry' to the success of collaborations. They suggested that the human factor should not be underestimated in terms of its role in ensuring the success or otherwise of a project.

The success of the relationship between an artist and a scientist is, in the majority, due to their personality. If you get people who click with each other it just tends to work well. What I mean by that is that it is really hard to come up with models for artists and scientists working together because it's not about disciplines, it's about people.

A number of artists who were interviewed and who contributed to the focus group reported the importance of both partners to a collaboration sharing a common vision and a desire to work together. The attitude of both the scientist and the artist seemed to be a crucial factor in determining the longevity and success of a partnership. As one focus group member commented: "A good partnership needs an expert and sympathetic scientist and an expert and sympathetic artist." The importance of personal working styles and personality was underlined by several focus group artists, as this indicative comment suggests: "Scientists can be difficult to work with. Artists can be difficult too. No, artists are worse to work with!"

Although it was an important aspiration of the Sciart scheme to promote new forms of collaboration between artists and scientists, in selecting proposals to fund it was recognised that not all projects would involve profound levels of collaboration. In many instances, particularly in the later years of the scheme, it was seen as legitimate, provided their proposals were strong enough, for some artists to involve scientists simply in an advisory or interrogative capacity. It was felt by interviewees from both the arts and the sciences to be a strength of the scheme that, while it did encourage and support a mutuality of input, it was flexible enough to accommodate a spectrum of levels of involvement according to the needs of the project.

Several science interviewees concurred with the idea that scientists were involved more as advisers than as full collaborators in the outcomes. Sometimes that was because, practically speaking, they did not have time to give sufficient input. But from the artists' point of view, the input of the scientists was wonderful, because they were learning something. And that was a good input for them, even though the scientists weren't influencing what was produced...

(Expert who had conducted a previous evaluation involving Sciart-funded projects)

The artists want to learn something and to make an artwork. And have to be free to make the artwork they want to make, not to be a PR agent. The scientist can be anything from interested and well-meaning, to wanting an artist's eye on board, to being genuinely open to committed collaboration...

There wasn't really collaboration; he just picked people's brains...It was more about institutional critique; about seeing how things worked in that building and it was less about talking to people about their specific scientific research...There was less contact with individual scientists, but it was nevertheless one of the more challenging projects there. It got a lot of people talking.

7.6 A foundation to build on

There was clear evidence from the interviews that Sciart-funded projects had increased the possibility that further art–science collaborations would be pursued in the future. Each of the 31 project participants or facilitators who were interviewed for the research said that they would be interested to collaborate again with someone working in the other field (either science or art). An additional strong finding was that the experience of the first collaboration had significantly increased the confidence and sense of capacity both of individuals and of organisations to be able to enter into interdisciplinary collaborations (which may not necessarily be confined to just the arts or the sciences).

It made us more confident in terms of our ability to collaborate on projects. It opened up other possibilities for us in terms of approaches to working with other partners. We have gone on to have quite a few collaborations since then...

I feel more positive about working with scientists now, because of the openness to ideas and to collaboration that we found. And it's definitely something we would consider doing again if the right project came along and the right match could be made...

The collaboration was successful, and it was as we imagined it, but in retrospect I feel able to move forward in a much clearer way with Y1.³⁶ I didn't really know how to brief Y2, or how to contract him. But that kind of thing is clearer to me now...it has made us confident to move on to another Sciart project. It gave us the confidence to approach Y1 as a possible collaborator. I also know now how to talk to artists and curators and venues about working in this field.

Through the example of the projects funded, Sciart was also felt to have raised awareness at a more general level of the potential for artists and scientists to collaborate, and in this indirect sense it was thought to have been responsible for encouraging more collaboration to occur.

The scheme has initiated a wider appreciation that there can be support for artists to work with scientists. Both scientists and artists know that they can be supported to be collaborative. It has laid the groundwork for more collaboration across science and art to happen.

In the survey of successful and unsuccessful applicants both categories of respondent reported that they had been involved in new forms of collaboration. This has to be understood in relation to the fact that most unsuccessful Sciart applicants tried to find other funding to continue with their project. However, the survey results also suggest that success in applying for Sciart funding had considerably increased the likelihood of forming new collaborations. For example, 81 per cent (n=21) of successful applicants reported going on to build new collaborations compared with 59 per cent (n=74) of unsuccessful applicants. There was, therefore, a 22 percentage point greater likelihood of forming new collaborations where Sciart funding was attained.

³⁶ Two scientists were named in this comment, here anonymised as Y1 and Y2.

Chapter 8: Sciart and the public

- **Sciart projects had attracted extensive media coverage and large audiences that included both the general public and niche professional sub-sectors and groups.**
- **Sciart projects are presented in a range of venues and platforms and across many fields.**
- **Outcomes of Sciart projects are widely disseminated through discursive events in which both artists and scientists regularly take part.**
- **Interest in and demand for projects often remains strong even after the period of Sciart funding ends.**
- **There is often a high level of public exposure and engagement for a relatively small amount of money.**
- **While the visibility of some individual Sciart projects was high, the corpus of the projects funded through Sciart was not well recognised or understood.**
- **Though science and art collaborative projects do gain wide exposure, some specialist arts venues remain sceptical about this type of hybrid practice.**

8.1 Far-reaching outcomes

Although not all Sciart projects were funded in the expectation that they would result in public outcomes (this was not explicitly a condition of the funding that was awarded to some of the projects supported in the Experiment and R&D categories of the scheme), the evidence of the ten case study projects suggests that in most cases public outcomes did actually result whether they were intended at the outset or not, and that often such outcomes had enjoyed extensive and widespread dissemination, attendance and recognition. An audit of the ten case study projects revealed that:

- Eight of the ten had resulted in exhibitions, screenings or performance-related events in venues open to the general public. Six of these had toured to at least three public venues.
- Six of the ten projects had achieved international exposure through exhibitions, screenings and performance-related events. Countries where the case study projects had had significant exposure included: the USA, Canada, France, Switzerland, Germany, Italy, Portugal and Sweden.
- In at least four out of the ten instances the Sciart projects had attracted what were described as either record or very high audiences to the venues concerned.
- Six out of the ten projects had attracted significant levels of publicity both in the specialist arts press and in the national (and in several cases international) media. Three of those projects had attracted what was described as an unprecedented level of media attention to the venues concerned. Four of the projects had resulted in the artists or scientists involved being interviewed on the national broadcast media.
- Nine out of the ten projects had involved discussion events where the artist and/or scientists concerned talked about their Sciart-funded work to an audience either of professional peers or of

the general public. Sixteen out of the 21 artists and scientists interviewed about their participation in Sciart-funded projects said that they had taken part in talks, lectures, seminars or conferences in which they discussed their Sciart project.

8.1.1 Public appeal

The case studies showed that Sciart-funded projects had often proved popular with the public, sometimes to a greater degree than the host venue had anticipated. In some cases this unexpected popularity had largely resulted from national media coverage.

It was the most successful show we have had in terms of audience over the last five years, by some margin. It was a very very popular show; almost double our average for that time of year...

Visitor numbers were up about 3500 for that particular show, which gives a sense of the extra interest generated. We had about 8500 people for that show, compared to our average of about 5000...

Visitor numbers were terrific, over 2000, which is very good for us. We were expecting about 1000 visitors. We had coverage in Frieze, Art Monthly, Modern Painters, Time Out, Art Forum and Tank magazine; it was quite international as well. That was a particularly strong response from the art press, and all positive...

In terms of audiences, it was a really crucial show for us. The audience response was all tied up with the press coverage...we hadn't anticipated the level of interest. That generated a huge interest in people who hadn't previously known about us. It drew in a different audience demographic.

A distinctive achievement of many of the case study projects was that it was reported that they had succeeded in appealing to a range of different audiences on different levels. This was most strikingly so in the case of a film project that had received critical acclaim on the international short film circuit (with exposure and award nominations at prestigious international festivals such as at Edinburgh, Berlin and Venice) and had at the same time achieved very wide dissemination and high approval ratings among a particular section of the international healthcare community. Several other arts producers and promoters reported similar success in presenting Sciart-funded projects that were complex in both artistic and scientific terms but had nevertheless achieved a popular as well as specialist appeal.

It was really successful in moulding together high-level ideas, community participation and international reach. It was popular without us losing our integrity, which is a real winner...

A good exhibition has to be very stratified. There are layers that anyone can engage at, and this was one where five-year-olds could have fun, but also serious academic thinkers could be engaged by...

It was hugely successful in opening up an audience who are actually working in this field and who are touched by [the subject] in their job or through a caring role. The feedback has been extraordinary from both practitioners and journalists in the field.

8.1.2 A benefit to venues

Many of the venues and promoters that were interviewed reported that the Sciart-funded project had added an innovative and unusual aspect to their programming. As well as providing an exceptional opportunity to include the perspectives of scientists in their public events programmes, it had enabled

venues to profile the outcomes of high-level interdisciplinary research. This had been a particularly valuable and important opportunity for arts or cultural venues associated with the university sector.

It was exactly the sort of project that we should be associated with: it was high-level international scientific research, deeply embedded in this university, which was going to find a major channel of its development and its communication through a cultural output; if you want a case study for what an institution of this kind should be doing, and can do, then that is it...

The role that [we] could play in brokering a relationship between very high-level and specialised and arcane research and the public was an important outcome...The project will remain a touchstone for some years to come for the sort of programme that an institution like [us] can and should uniquely be doing.

The venues in which presentations had taken place – which might be scientific, medical and/or historical as well as artistic – had inevitably influenced the reception, and in some cases had regulated the presentation, of the work. For example, in one arts project in which a clinical trial was proposed the presentation was not permitted (on health and safety grounds) to go ahead at the originally intended venue, a science institution, but was subsequently able to take place at a number of different arts venues.

8.1.3 Discursive dissemination

There was evidence from the interviews with case study representatives and external experts to testify that Sciart project participants (and other individuals who had some association with the scheme) had been heavily involved in disseminating information and debating and discussing issues relating to Sciart-funded projects through lectures, talks, conferences, articles and papers, often within the university sector. Two artists reported that they had devised and taught courses within higher education institutions – in the USA as well as in the UK – specifically based on or inspired by the Sciart projects that they had worked on.

There was a presence of artists at scientific conferences, and some of the work was referenced in academic papers. That connection with academia was very useful, and that was certainly something that the scheme had had an impact on. That artists were more visible within academic contexts was I think an outcome of the scheme, including having some presence within scientific discourse...

I do show a lot of these [Sciart-funded] projects to artists, scientists and to the general public through talks and lectures. If I talk to art historians I present the projects as works of art, and these objects stand up as artworks and are given a lot of respect.

8.1.4 Longevity of interest

A striking finding to emerge from the interviews with case study participants was that a high proportion of the projects had enjoyed unusually long periods of dissemination. Six of the seven projects that had produced presentational outcomes were still actively being toured or promoted in some way and most of these were still receiving requests to be shown or talked about. This finding would seem to testify to the quality as well as to the popularity and relevance of the projects concerned.

They are still on this sort of extraordinary conference and lecture circuit because of the film and publication. That is interesting for Y, because normally in the world of science you publish a paper and you move on. You rarely find yourself repeatedly going back to something in this way...Many such projects get funded for a little

tour and then that is the end...that is one of the ultimate tributes to what has been done; that now up to two years after the exhibition the work is still being valued...

It was incredibly rewarding actually, because most films have a limited life on the film circuit, but this had a different lease of life and a different kind of reception. It was fascinating to show it to people who were either carers or professionals working in the field and to get their heartfelt responses to it. We had hoped for that, but we didn't realise how potent it could be, or how rewarding and fulfilling...It's amazing that two years later it is still very much ongoing. That is unusual in terms of a short film project.

8.1.5 Amount of public exposure does not necessarily reflect scale of funding

It was noteworthy that, of the ten case studies examined, the two projects that had received the least amount of funding (£5000 each from the short-lived Experiment strand of the scheme) had both produced public outcomes that had attracted a high level of demand to be shown. Both had been presented in at least four different venues; both had been profiled at science as well as at arts venues; both had been presented in venues or in exhibitions of national stature; and both had been shown internationally. Each of the four case study projects that had received Production funding (with amounts ranging from £88 000 to £98 400) had also been toured and disseminated very successfully and extensively, but the point seems worth making that the example of the case studies shows that significant public outcomes demonstrating considerable exposure and audience reach was achieved on modest amounts of funding.

8.1.6 Quality of audience engagement

Although there was strong evidence to suggest that a significant proportion of Sciart projects were through a variety of means reaching large numbers of people, less evidence had been gathered about the quality and nature of that engagement. One project participant had conducted an evaluation of the effectiveness of the screening of a film as an aid to facilitating discussion among a peer group of health professionals of a specific biomedical issue, with very positive results. In another example, the exhibiting venue reported that, because of the challenging nature of the ideas involved, the Sciart-funded project that it had hosted had provided the occasion for a new approach to proactive invigilation, which had been successful in encouraging visitors to spend more time in the exhibition than would usually be the case.

X did a number of sessions with a large number of invigilators, and encouraged them in lots of different ways to take on board the research and to engage people...Visitors were immediately engaged by a member of staff and encouraged to participate...We did some research while the show was on, and found that the average time spent in the space was about 20 minutes, as compared with the two minutes that visitors had spent in previous exhibitions. It made for a very different gallery experience for a lot of people.

8.2 Issues relating to the visibility of Sciart-funded projects

There is a sense that is not as accessible and visible as it might be; that you get to hear or read about it more than to see it.
(Sciart-funded artist)

The case study analysis provided concrete evidence of the extent to which Sciart projects had succeeded in attracting public audiences. The findings of this analysis were generally positive, showing that a large number of public outcomes had been achieved, which had wide dissemination and could demonstrate positive indicators of success. The findings of interviews with expert commentators regarding the

effectiveness of this public-facing aspect of the scheme were, however, somewhat mixed and tended to be more qualified. Many of the reservations expressed on this issue related in some way to concerns about visibility. The quote that introduces this section was quite typical of remarks made by a majority of the Sciart participants who were interviewed. Most admitted to having seen at first hand few, if any, other Sciart projects. It was more common for interviewees to have come across them through conference presentations than through attendance at exhibitions or events.

While recognising the success of individual projects in promoting their own outcomes and achievements (as was evidenced by the analysis of individual case study examples), a view was expressed that the body of Sciart projects as a whole had not succeeded as well as might have been the case in gaining public recognition and understanding.

The Sciart partnerships that have been successful have been quite incredibly good at disseminating their results: the works of art, the scientific papers, the interviews in the media, etc...The thing that has never been got across in this individual series of presentations is that they are not seen to have been part of an overall movement, or a coherent effort...There isn't therefore a public perception of Sciart as such, there is only a perception of the results of individual partnerships...

An impact on the broader community is unlikely to be felt without a more coherent overarching theme...It was a weakness of the Sciart programme that there was not a theme, say for a particular year. That was important in terms of public awareness. The public needs to be bombarded with a mass that is greater than the one...Each case study was so individual.

Although most of the Sciart-funded case studies had succeeded in generating substantial media interest and publicity, it was a strongly held view of one project participant that the Wellcome Trust should itself be doing more to help to publicise the projects, particularly those that had received high-value Production Awards. It was argued that, compared with other funders, the publicity given by the Trust to its awards was very low-key and that the Trust – as an important and newsworthy public institution – had a public profile and access to potentially interested audiences that were not being capitalised upon to benefit Sciart projects.

The Wellcome Trust publicity was quite appalling really, given the amount of money they give out every year...They seemed quite lackadaisical about that, which seemed odd for awards of that value: around £100 000. For much smaller awards, such as the Jerwood or Turner Prizes, or the Northern Art Prize, they all seem to get a great deal of publicity. And the Wellcome Trust has the scope to raise publicity well beyond the arts, because of their general stature...

If their remit for the awards is to increase understanding of medical science, then you would think that publicity would be way higher up on their agenda; to maximise the impact of these awards. Maybe it would not be so appropriate for R&D Awards, but for the Production Awards, where you are investing large sums of money in just a few projects in the expectation of some very visible public outcomes, you would expect a significant publicity machinery to be behind that.

8.2.1 Arts venues' scepticism

A perception articulated both by a number of expert commentators and by some of the arts producers who had participated in Sciart-funded projects was that there was a residual resistance in certain parts of the arts infrastructure (particularly in more 'elite' venues and establishments) to embracing the type of work that the scheme supported. Suggestions advanced for why this might be the case included: a wariness of

the perceived link between the projects and the instrumental mission of the Trust to promote the biomedical sciences; doubts about the artistic merits of the work; and difficulty in translating the scientific concerns of some of the work produced into a language that would make sense both to the professionals running arts venues and to their audiences. For these reasons it was suggested that, although significant successes had been achieved, work originated with funding from the Sciart programme had not fully succeeded in permeating into the arts mainstream.

The reaction I got was: 'we work with the best artists and we always work with the highest artistic quality. If we want to tour a Sciart project we will commission a new piece of work'...They seemed to think that the work coming out of the scheme was second-rate, or not of the highest quality, and so they were not interested in touring any of it. They would much rather go to an artist who they knew had an interest in science and then commission them to do something new...

The Wellcome Trust is a biomedical institution, so it was always going to be difficult for it to get established as an arts funder such that the arts community would say 'this is worthy of being seen in contemporary galleries'...

There is still a lot of prejudice I think; it is a language thing, a lot of the time. [The project] has made me more confident about translating between the arts and the science worlds, and that is what you have to do in a project like this. If I had talked to the BAL TIC in the terms used for the Wellcome Trust [Sciart proposal], about interspecies communication, there is no way that we could have persuaded them to take on the project. So it is a presentational thing; about the language used.

8.3 *Faces of Battle*: a case study of audience impact

As part of the impact evaluation methodology, a case study was undertaken to gauge the audience reactions to a particular Sciart-supported exhibition. The exhibition was *Faces of Battle*, which took place at the National Army Museum (NAM), London, from 10 November 2007 to 1 October 2008 (falling during the fieldwork period of the study). In *Faces of Battle*, work made by the artist Paddy Hartley³⁷ during the course of a Sciart-funded initiative, Project Façade, appeared within the context of a broader exhibition, which Hartley had helped to curate. This was an interesting exhibition to explore from the perspective of audience impact, as its placement in a military museum meant that the content would not automatically be 'read' as being either art or science.

Project Façade involved a close collaboration between Hartley, Dr Andrew Bamji (the curator of the Gillies' Archives³⁸), and Dr Ian Thompson (Biomaterials Scientist at King's College London). All three collaborators worked to trace the stories of the patients of the pioneering surgeon Sir Harold Gillies after they left care, and to establish links with their descendants. Hartley first came into contact with Dr Bamji and the Gillies' Archives through his research into the origins of facial reconstructive surgery. His artwork aims to bring the stories of Gillies' patients to a wider public. In 2004 Hartley received a Sciart Production

³⁷ Paddy Hartley has been working in science-and-art-related projects for 15 years. His work explores the historical, ethical and practical aspects of biomedical science through sculptural artworks. Previous works have been presented in the Science Museum (London), the Royal College of Surgeons (London), the Dana Centre (London) and the International Body Modification Conference (Sydney, Australia).

³⁸ Sir Harold Gillies was a groundbreaking surgeon who transformed the discipline of plastic surgery when he worked at the Queen's Hospital, Sidcup, between 1917 and 1925. Fuelled by the flood of casualties from the battle of the Somme, the Queen's Hospital developed as the major World War I centre for maxillofacial and plastic surgery. Opened in 1917, the Queen's and its associated convalescent hospitals provided over 1000 beds and between 1917 and 1921 admitted in excess of 5000 servicemen. The hospital trust continues to hold an extensive archive documenting the work of Gillies and the development of the discipline.

Award, and the artwork that resulted consists of a series of sculptures based on the tunic of a military uniform, which convey the personal histories of soldiers using information from multiple sources. In *Faces of Battle*, the sculptures were presented alongside original documents from the Gillies' Archive, and the exhibition was curated in such a way as to create a dialogue between the artworks and the medical documentation. The curator at the NAM, who worked with Hartley to realise the exhibition, commented: "I look at the pieces first as art but then you view the art with a different background because of the scientific material."

8.3.1 Case study methodology

A number of different methods were used to gain insight into the audience reactions to this exhibition:

- keyword analysis of the press and media coverage
- keyword analysis of unsolicited audience responses gathered through a visitors' comment book located at the end of the exhibition
- audience survey conducted over two days (one weekend day and one weekday).

There were some limitations to conducting audience research around this exhibition. First, as the exhibition formed only part of the more general collection at the NAM, it was not possible to ascertain exact visitor numbers. Secondly, as some of the imagery in the exhibition was very graphic and unsettling, *Faces of Battle* was discreetly located within the general collection. Additionally, the exhibition – and some of the accompanying publicity – carried warnings about the 'shocking' nature of the imagery, which might also have limited visitor numbers. Despite these limitations, the exhibition appeared to attract a wide audience and to initiate a number of impacts.

8.3.2 Analysis of media coverage and visitor comments

The exhibition gained extensive media coverage, including television, radio, national print media, newspapers, web-based publications, special interest and professional journals, and event guides. A random selection of ten print-based media articles³⁹ was analysed by key words to determine the nature and scope of the coverage. In summary it can be said that the medical aspects of the exhibition were highlighted far more than the artistic elements. Only 30 per cent of the articles referred to the artist at all, and of these only one article gave significant coverage to the artist. The museum curator received more mentions. The words 'science' and 'art' did not appear in any of the articles sampled, though 'sculpture' was used on two occasions and 'artist' occurred once. Neither the Wellcome Trust nor the term 'Sciart' were mentioned.

Words used commonly in connection with the exhibition included:

- hard-hitting
- shocking
- revealing
- battle
- stories

³⁹ The media coverage in the sample came from diverse sources including two history journals, a military magazine, a museum sector publication, the BBC, *Newsweek*, PA Newswire, Newsdesk, and the *BMJ*.

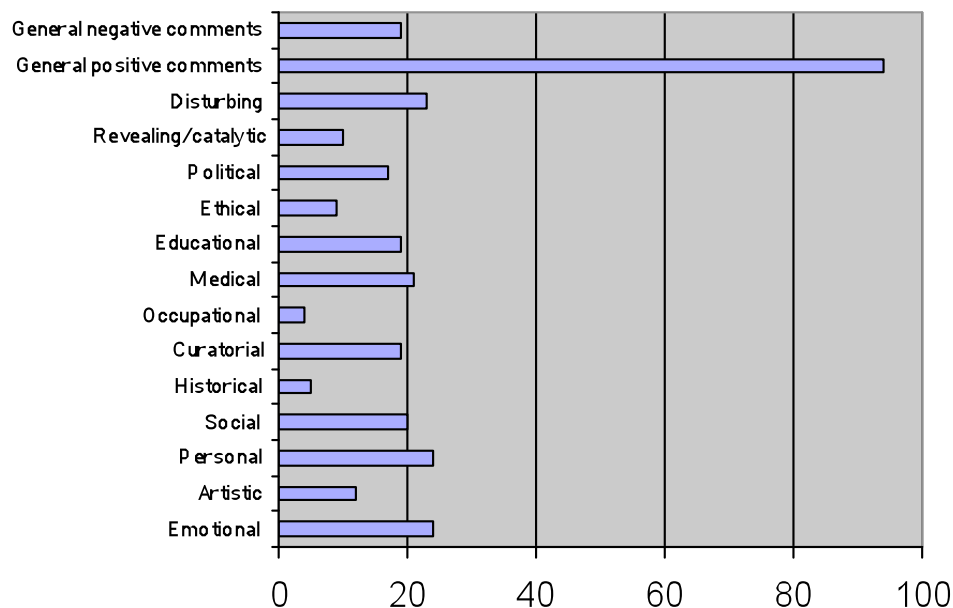
- wounded
- hospital
- disturbing
- plastic surgery
- casualty
- war.

Images of Hartley's artworks appeared in 20 per cent of the articles, whereas 80 per cent had images taken from the medical archives and casenotes. These findings indicate that while the exhibition raised considerable media and public interest, this was more oriented towards the historical and medical aspects than the artistic outputs. This was perhaps a result of the fact that the NAM was responsible for driving the media campaign. Similarly, as none of the sample articles mentioned the work of the Trust or Sciart, the publicity did not specifically add to the kudos of the funding programme or of the Trust, though it could be argued that there might be a 'general field' flow-on effect on terms of raising the overall awareness of science and art collaborations.

An analysis was also undertaken of comments made in the visitors' book, positioned at the end of the exhibition. This book contained 320 distinct (individual) responses and the comments made were often quite extensive, with over 8500 words of comment recorded over a three-month period. The overwhelming view regarding the value of the exhibition was very positive. More particularly, the audience for the exhibition had made a strong personal connection with the content, which they found very emotional. A significant number of people had found it to be disturbing. Some people specifically commented that they felt that the scientific part of the exhibition was good, but that the artwork was in bad taste or should not have been included.

Figure 7 summarises the main themes of the comments received.

Figure 7: *Faces of Battle* audience comments as recorded in the visitor book



The 15 distinct categories of response are indicative of the variety of responses made spontaneously to the exhibition. Table 5 provides samples of the comments made and shows the depth of feeling aroused.

Table 5: Samples of thematic quotes from *Faces of Battle* visitors

Theme	Sample recorded quote
Knowledge	<p>Amazing and interesting, really good interpretation of facial injury in WWI. It has really built upon my knowledge of the Great War. Thank you.</p> <p>This was fascinating. I have studied a lot of military history, but never examined this area, and I have had my eyes opened today. Thank you.</p>
Personal	<p>Well worth the journey to see the exhibition. I remember my great uncle had similar injuries requiring the plastic surgery. Very humbling.</p> <p>Brings perspective to the alleged 'Glory of War'. (An ex-RAMC serviceman)</p>
Social	<p>Interesting and a moving exhibition. My interest is mainly in the surgery, but the personal stories also interest me. When I was a child going to the west country for our holiday an airman with facial burns was in our carriage – as my father had been in the RAF, the grown-ups spoke about his injury. I can still remember him after 50 years – and his injury was less 'obvious' then that of the men shown here.</p>
Cultural	<p>Humbling experience to see the work of these pioneering doctors. A harrowing, moving exhibition – well done. Shows the real face of war – mutilation, pain, mental and physical suffering.</p> <p>I am a student studying here in London. I am from America and it comes to mind, more from this exhibition than any other I have seen, that war hurts everyone no matter the nationality. Excellent exhibition.</p>
Ethical	<p>A very upsetting but also uplifting exhibition, leaving me with much room for reflection – wars are such useless things.</p> <p>Amazing exhibition, 'What Price Freedom'. NEVER FORGET!!!</p>
Artistic	<p>A very thought proving expedition [sic]. I thought that it's [sic] interpretation of facial injuries through the medium of art was especially well done. Thank you.</p> <p>Paddy Hartley has created something truly unique thank you for this moving and sobering work of art. And thanks to the museum for having the bravery to show such controversial matter. I am in awe.</p>
Medical	<p>A very moving and informative exhibition on how plastic surgery has advanced and its true value to disfigured individuals. My heart goes out to the soldiers who suffered, and also shows how shallow society can be to others less fortunate.</p> <p>As a foundation year house officer in surgery, this exhibition has been an invaluable learning aid. Thank you so much for so beautifully collating these important and moving records.</p> <p>Truly amazing. As a maxillofacial surgeon, I am proud to see the work of these surgeons. The humanity of the patients is ever present – thank you.</p>
Catalyst	<p>An interesting and emotional exhibition. I am so pleased I saw this advertised on the BBC. My great grandfather had facial surgery following WWI in which he lost an eye. I will be asking my grandma to send you an account. This kind of innovative surgery should not be forgotten!</p>
General	<p>I am so glad I came. It was advertised in the Metro. Thank you.</p>

From these sample comments it can be seen that the influence of a Sciart project when translated into an exhibition can extend far beyond the boundaries of either art or science. In this case, the exhibition generated a very large volume of comments and responses that addressed serious social, cultural, political and personal issues.

While the comments were overwhelmingly positive towards the exhibition as a whole, a smaller but significant number of respondents also found the combination of art and such serious medical science to be inappropriate. The following quotes are indicative of several comments made:

Hartley's 'artwork' adds absolutely nothing to an otherwise inspiring exhibition. The insinuation that the wounds of some men should be concealed is offensive in the extreme.

A wonderful and moving exhibition of brave and courageous men in war and on the operating table, and of their surgeons. But why oh why the hideous uniform 'sculptures' – they add nothing and make a mockery of suffering. The 'embroidered' facts could be much better conveyed. That part of the exhibition should go at once.

What to the point in trying to 'artistically interpret' these men's injuries? Surely (I think) just showing the extent of the injury is far more thought provoking?

The comments indicate that there is a challenge in bringing emotive subject matter that is private and medical in nature together with an artistic response. While there were critical audience responses, there were also a number of comments that valued the interpretative role of the sculptures.

Very powerful – some of the images are hard to look at, which adds to the importance of showing them. The artwork is actually a relief; it has a sort of 'distancing' effect. Makes one think of the psychological damage, and the lack of support with that. Thank god PTSD is (hopefully) acknowledged now.

The concept of the sculptures is absolutely fascinating.

Absolutely moving and brilliant use of textiles.

I love the jacket/story theme.

The conflicting audience views revealed by the visitors' book comments open up for debate the role played by both art and science in how knowledge is communicated and shared.

In addition to the visitors' book, an exit interview survey was conducted with visitors both on a weekday and on a weekend. The results of this survey suggested that most visitors found *Faces of Battle* interesting. Most said they would recommend it to a friend. The majority thought that the exhibition was about science, but several people felt there was not any science in the exhibition. *Faces of Battle* tended not to change views about art or about science. The visitors were divided as to whether art contributes to the understanding of science or whether science offers a fruitful stimulus to art: approximately equal numbers agreed and disagreed with statements concerning this topic. More than half of the respondents had heard of the Wellcome Trust and suggested that the Trust "supports research and education in science and medicine" and that they "do medical research". Only one of the respondents to the survey had seen or heard any publicity about the exhibition before attending. In response to the question "What might happen if artists and scientists worked more closely together?" the audience felt that such

collaborations “would be good”; it might make science less male (“more blokes would meet more women”); and it “might help more problems to be solved”.

8.3.3 Analysis of impact

Every Sciart project is different so it is not possible through one case study analysis to make generalisations about the impact of the scheme on the public. However, a case study does provide an insight into the potential strength and diversity of audience reactions. The audience attending the *Faces of Battle* exhibition were from all sections of society, including the families of people featured in the exhibition, doctors, nurses and members of the medical profession, members of the armed services, and people of all ages. Visitors had come from across the UK and overseas.

For each audience group a different response could be observed. Families frequently made emotional and social responses to the exhibition. Conversely, medical staff found the information presented to be valuable professionally. One nurse commented: “This is the best teaching aid for tubal pedicules”. Servicemen made strong personal and sometimes spiritual connections to the work. One serving soldier commented: “This is what I’ll face in the next few days.”

The project had, through the research that had informed it, initiated a significant educational effect. People were contacted and research documentation gathered from a number of sources including doctors, children, grandchildren and other family members. A range of material was collected including field notes, medical records, photographs and oral histories. The research notes presented in the exhibition had been gathered from archives and from sources around the world (especially Australia and New Zealand). Project Façade continues to research and respond to the stories of the men who underwent facial reconstruction in World War I and these are gathered and presented through an ongoing website.

8.4 An opportunity to achieve greater audience impact

In conclusion, the evidence collected during the course of the Sciart evaluation, using multiple methods and sources, suggests that although numerous and diverse audiences were reached and significant positive impacts were achieved, the Trust could more proactively have capitalised upon the audience outreach potential that emerged from the projects that it had supported through Sciart.

Substantial audience recognition value appeared to adhere to the Sciart brand, but the research suggests that this may have been under-utilised. Many excellent exhibitions and presentations of projects were not exploited to their full potential in terms of placement and audience reach. Research and development projects were not always fully funded to include presentation. Very few of the projects documented audience reactions or evaluated the impact on the general public. In media coverage, the artist often received relatively few of the ‘column inches’, and references to the Trust or the Sciart brand were generally absent. Similarly, visual ‘branding’ of the scheme or of the Trust was often not apparent, or conspicuous, in project publicity. In summary, while individual Sciart projects had been successful in attracting media coverage and wide exposure, the association of these projects with the Sciart scheme was often understated.

Exploiting the potential for communication and publicity could increase the footfall, enhance public engagement with the arts, and promote greater dialogue about the innovations emerging from science and arts collaborations. The findings of this evaluation show that the arts can make a considerable

contribution to the biomedical sciences by bringing scientific studies and ideas (both historical and contemporary) to a wider public, and that they do so through modes of communication other than text, including exhibitions, film, and digital platforms.

The Trust appeared to lack targets or expectations in terms of the audience for Sciart. To capitalise on the potential for audience reach, a more coordinated communication plan is needed. The planning and preparation of public communications should be a stronger part of the grant-awarding process and would benefit from being the joint responsibility of all partners: arts, science and the Trust. Within this, consideration should be given to who adopts which roles and tasks. Agreements need to be reached about communication processes and strategies, including whether art is communicating to art, science to science, or whether cross-disciplinary or general communication is involved. Allied to this, evaluations of audience reach and impact should be encouraged as an integral part of the project process, particularly for the higher-value awards to support large-scale productions. The evaluations should be analytical, rather than descriptive, in nature, emphasising lessons learned as well as targets attained. These recommendations imply a need for adequate resources – in terms of finance, time and personnel – to be factored into the project planning and this will affect the level of award required.

Chapter 9: The public's engagement with science through Sciart projects

- Sciart and science and arts projects have over the past ten years become a recognised part of arts practice and have entered the cultural mainstream.
- Collaborating with the arts has enhanced 'public engagement with science' activity and has provided new platforms of communication for scientists.
- Science-based collaborations have helped artists to reach new non-arts audiences.
- An important audience for science and arts projects are scientists and other people associated with the medical profession.
- Science (especially biomedical science) and arts projects have heightened clinicians' awareness of the patient perspective.
- Sciart has contributed to a growth in interest in the alleged healthcare benefits of the arts, even though that was not an intention of the scheme.

9.1 An expectation fulfilled?

There is a perception that the Wellcome Trust's practice in the area of public engagement with science has grown in sophistication and profile in the ten years since Sciart was launched. That is partly linked to the development of the Trust's new facilities in Euston Road, but it could also have something to do with the influence of, or lessons learned through, Sciart.
(Expert commentator)

An important driver for the Sciart scheme was the hope and expectation that many of the funded projects would achieve public outcomes that would function both as artworks that were of merit in themselves and also – because of the collaborations that had informed them and scientific subjects with which they were concerned – that these outcomes would play a role in helping to inform and engage the public about issues and developments in contemporary biomedical science. This section of the report considers perceptions and evidence of Sciart's efficacy in this area.

The survey conducted as part of this evaluation into the experiences of both successful and unsuccessful applicants to the Sciart scheme indicated that Sciart had succeeded in meeting the Wellcome Trust's 'public engagement' aim: 76 per cent of survey respondents who had been successful in applying for Sciart funding either agreed or strongly agreed that "participating in a Sciart project has encouraged greater public engagement with science". The same percentage agreed with the statement that "participating in a Sciart project has encouraged me to be more involved in engaging the public in science".

There was also a strong view among those interviewed for the study that Sciart had funded projects that had succeeded in demonstrating to the public that there could be a fruitful synergy between the sciences

and the arts, and that these projects had contributed to a wider public awareness of issues and developments in contemporary science.

Sciart projects were hugely important in raising public awareness: in getting people in to galleries who wouldn't normally go, or in getting arts people interested in science issues. It's not a coincidence that the new Wellcome Trust galleries are attracting such a good audience. I think there is now a new public acceptance of the notion of art being informed by science. I'm not sure it made the same impact on the idea of science being informed by art, but it certainly made a good first step.

A small minority of interviewees suggested that Sciart had essentially failed in its aspiration to encourage wider public engagement with science-influenced art and with science in general, and that it would have been better for the Trust to have been more circumspect in the emphasis that it gave to the 'public engagement' aspect of the Sciart scheme.

An overt aspiration of Sciart from the start was that it would assist the public appreciation both of science and of contemporary art; it was in part a communications project, linked both to the public understanding of science and to the public appreciation of art. It don't think it has been particularly successful in either...The public perception of most of the projects is that they have been relatively wacky, relatively experimental and have produced work that has not been particularly accessible to a general public. So, as a public engagement project I actually think that Sciart hasn't been very successful at all...

In a way, you were kind of doubling the difficulty rather than halving it: you were producing a project that was relatively abstruse in terms both of the science involved and of the contemporary art. You were bumping up against the problems inherent in each of the respective fields that contribute to a widespread public suspicion of contemporary art and to a widespread lack of engagement with contemporary science. So, I'm probably saying that that was never an achievable objective. In a way, it is setting itself up to fail...it should not be overburdened with impractical aspirations for public engagement.

9.2 How the public engaged with science through Sciart

One of the ways in which Sciart was felt to have been effective in helping to promote awareness of science was by helping science to become more visible. For example, through Sciart-funded projects artists were brought into centres of science and, conversely, artworks inspired in some way by scientific themes and concerns were presented in a range of public venues where science would not normally have been visible, such as in art galleries, museums, concert halls and cinemas.

Artists being quirky and their work being attractive was an obvious incentive to bring them into the science arena. When you look at the products of Sciart, it's clear that it is a good way of getting science into the cultural mainstream, into the theatre and the galleries, and it gets science galleries looking a bit more strange and interesting. So that is an important element of Sciart. If you say 'has this activity made people now think more about science or debate it more?', I couldn't say. But you can say that through artistic involvement the ways science is manifest in our culture is now broader.

Interviewees expressed a number of views regarding the mechanisms by which members of the public were informed about science through the agency of Sciart-funded projects. There was a perception that information and ideas about science were absorbed almost as a side-effect of coming to exhibitions and events for what were primarily artistic reasons. These encounters provided a kind of informal introduction to scientific issues that would raise awareness and might set people thinking.

The public that comes to science–art events come primarily to see them as exhibitions, as works of art, but it does get them thinking about scientific issues...There was a sense that they were gaining knowledge by a kind of osmosis of some scientific issues...

X's work at the Barbican was a really interesting thing to see: that scale of performance actually talking about psychology and the process and impact of therapy on the individual. I think projects like that did have a real impact in terms of provoking new insights in the public, as well as of raising awareness of the issues.

It was suggested that, stimulated by their first encounter with unfamiliar ideas, individuals would be inspired by their visit to Sciart-funded events to delve further into the topics introduced. There was also a view that for some arts-inclined audiences who might instinctively find the idea of scientific engagement unpalatable, Sciart-funded projects might provide a more sympathetic and successful route in.

Many of the projects have elucidated the scientists' work. They make you think 'what an interesting image, what is all that about?' and then you go away and read about the science...

I might not go to an exhibition of scientific fact because my assumption is that I will not understand the language. However if I go to an art exhibition where I am familiar with the language [of art] and I am introduced to some new science I may be more likely to be drawn in.

One arts promoter commented that it was prudent to be realistic about what a mainstream arts venue, particularly one that was unused to including science-related material in its programme, might be expected to do in terms of contributing to the public's engagement with science.

What we can do is more encourage a general awareness and accessibility to the ideas, rather than make everybody go and pick up a Bunsen burner.

Sciart-funded projects were said to have been effective in providing insights into specialised and perhaps arcane areas of scientific research, but also to have communicated very effectively important ideas and insights into science at a very general level. Several instances were cited of Sciart projects that helped to get across messages about the effects of science and of biomedical conditions on everyday life. In at least one case study project the initial intention had been to shed light on a little-known medical condition, but it became evident that an equally important 'message' to emerge from the artistic outcome was a more immediate one about the nature and enthusiasm of the scientists who were engaged in research about this condition.

We thought that even if they didn't quite follow the detail of the scientific argument they would at least get the idea that scientists are passionate about what they do and that they get really excited about their science. And more than the particular story about [the medical condition], the most important thing is that the film communicated this idea that scientists do get excited about their work, and that work in this area involves all kinds of different people working in all kinds of different places...

A very arcane and specialised bit of scientific research, led by a leading researcher in his field, that would have otherwise have been conducted in a lab in a hidden corner of a university, was put into the public domain in two ways: engaging with the public about those particular medical conditions; and also making visible what they do to the people who are suffering from them, and to their relations...

The contribution of projects like this to public understanding are around enabling people to understand that science is not so far removed from everyday life...I think that is what I learned from the project.

9.2.1 A new platform for scientists

There was significant evidence based on the testimony of scientists who had participated in Sciart projects that scientists themselves had become convinced that art represents a persuasive and powerful means of articulating and communicating ideas about science and, as such, could help to promote significant engagement, at both a public and a professional level.

I don't think that the project has made me think very differently about art and science. But it has further convinced me that art can convey, either explicitly or implicitly, viewpoints and connotations about scientific topics in powerful ways. This holds true regardless of whether the artist possesses a profound familiarity with the scientific topics. Art can therefore act as an important catalyst to spur a discourse about scientific research both among the scientists themselves and in the general public.

One very important and concrete way in which a deeper level of information exchange and engagement was facilitated in many Sciart projects was through the participation of scientists in the associated dissemination events. The case study interviews indicated that it was very common for artists and scientists to share a platform together in events such as gallery talks or university seminars or conferences: this had happened in eight out of ten of the case study projects. Some arts venues said that the Sciart project was the first occasion in which a scientist had been invited to give a talk there. Several scientists said that the Sciart projects had presented an opportunity for them to communicate aspects of their research in person to audiences to whom they had not previously had access. Being able to communicate in person and directly to a public audience was regarded as a distinct advantage by some of the scientists who had participated in such events.

The science and art exhibitions were definitely a new arena for public engagement as it provided a space to get answers from experts in a way that wasn't possible previously. It was one of the first opportunities I had to talk about what I was doing as a scientist. I was amazed to be approached by members of the audience. It was just a joy when their eyes would light up when you explained something and they really got it...

It allows the public to connect with the scientist at a more personal level and when that happens I think that the public is able to touch and therefore to gain trust in the scientist. They can't engage in an emotional level when they are just a talking head on the telly. We need to be able to trust and respect people, and we gauge them by being able to see people in a situation where they are just being themselves, which fundamentally gets science over in a completely different fashion. The artistic context somehow helps you to be yourself much more easily than the scientific context.

9.3 The implications for art and for artists of Sciart's 'public engagement' agenda

Although there was a general agreement among interviewees that Sciart projects had been effective in communicating information and ideas about science, some reservations were expressed about whether this was an appropriate expectation to place on arts projects. There was a sense, particularly among some of the artists, that this instrumental view of what the arts might achieve was a downside of Sciart, particularly when it was a very explicit feature of the way that some projects were promoted.

Audiences are learning something new about science through the artworks because they are seeing science through the prism of art. So, it has had a tangible influence on the public engagement with science. But public engagement can also be a limiting experience...part of it is to do with a perceived worthiness: that it is good that artists are collaborating with scientists; it is good that art is participating in the public engagement

of science. But for some reason that can create a somewhat pejorative atmosphere; when it wears its worthiness on its sleeve, when the art does appear to be doing something in the service of another function.

Perhaps to its credit (and as an indication of the liberalism of the scheme), there was evidence that some artists who specifically rejected the 'arts as a vehicle for the promotion of science' agenda, and were even explicitly hostile to it, had nevertheless been supported to realise Sciart projects.

For me [an artist who had gained a Sciart award], the work is about the space of science being a space for the construction of art. I'm not really interested in scientific content per se...I'm only interested in the art, and how the art relates to society.

Although the artists interviewed were generally cautious about the idea that their work might be promoted explicitly as a vehicle for communicating ideas about aspects of science, there was evidence that in some cases the possibility that the outcomes of their projects might be targeted specifically at audiences linked to the biomedical sciences represented a welcome and satisfying opportunity to communicate to a new and potentially receptive segment of the public.

I realised that it actually was more interesting than a regular short film, because it could have an appeal and significance beyond just the film world. Because of the distribution component that we had developed to tick the boxes and get the money we realised that actually we could create a built-in audience who actually could get a more profound and meaningful benefit from it. So, this idea of a dual outcome, with two separate but overlapping audiences, started to seem like an advantage, and the care sector audience allowed the development of additional teaching and training materials to happen.

However, there was a clear position among the artists interviewed that their intention in engaging with scientific or biomedical issues was not explicitly didactic, and that conveying information or ideas about science would for them always be secondary to achieving a satisfying artist outcome. There was strong evidence, obtained through a formal evaluation carried out in relation to one Sciart-funded project in particular, that rejecting a didactic approach to a biomedical subject was actually considered a more powerful way of engaging both public and professionally interested audiences in the topic. The production values and narrative and strategies employed in the associated art work were valued as a welcome alternative to didactic learning materials that currently existed in relation to that topic.

Depictions of such conditions that are films first and educational films only second actually seem like they might be more educationally valuable, because they can raise the issues more powerfully. I'm very happy that it has been used educationally, though that was never the primary intention.

9.4 Sciart offers a space for sceptical 'public engagement' with science

It was seen by some as a virtue of Sciart that the projects that it encouraged and supported seemed to fit better with the 'public engagement' rather than the 'public understanding' model of learning about science. Sciart projects were felt by some of the science educators who were interviewed to allow for a healthy scepticism and a questioning attitude to be developed by the spectator.

I see Sciart as part of the movement of public engagement with science. It doesn't fit the old model of public understanding...but it is part of the movement that says that just because the public are not experts that doesn't prohibit them from having a say...Research grants now often have a public engagement aspect to them and Sciart is a legitimate means through which that agenda can be interpreted...The demise of public

understanding and the rise of public engagement have gone hand in hand with the evolution of Sciart. They are both phenomenon of the last decade, and I think there is probably a connection between them...

I see the science centre idea as a reactionary attempt to make science transcendent and something to be learned in a passive way, even though its methods of display purport to be interactive. Sciart has kind of broken that assumption. You are allowed to go to a Sciart event and come away either unconvinced or even hostile to what you see. You are not really allowed to do that with a science centre. So, Sciart has been very useful in making that space for rendering science more open to questioning...It reintroduces an element of doubt and dissent into the visitor encounter with science.

9.5 Scientists and health professionals as audiences for Sciart

An important potential audience for Sciart-funded projects was the science community and, in particular, professionals working in some capacity in the biomedical field. Some considerable successes in reaching elements of this constituency were reported (and evidenced). It was also noted, however, that this large and variegated audience could be hard to reach, and also that many opportunities had yet to be explored to target and to engage some of the potentially interested sub-groups within it.

A number of interviewees commented on the relative difficulty that they had observed or experienced in attracting scientists and health professionals to Sciart-funded exhibitions and events.

At the conference...the delegation was nearly all artists, there were very few scientists. So at the level of professional audiences, the interest tended to be pretty one-sided...

Lots of arts and science projects find it really hard to mobilise the scientific community to come and see them, even when scientists have been involved in the making of it...It was a frustration that we did not get the [institution's] scientists along to the Barbican event. I don't recall any of them coming along. It is just not really a part of what they do: going to cultural events in the middle of the week.

The evidence of several of the case study projects was that scientists were perhaps more eager to engage in Sciart-funded projects as professional participants in, or observers of, the process, rather than as spectators of the finished outcomes. It was suggested that this might be to do with the fact that the scientists could identify more readily with the experimental aspects of process than with the final product.

All the scientists immediately became very involved and serious about their contribution to the success of this film project. I didn't expect this degree of interest and dedication...It turned out later that the scientists' interest in participating was considerably higher than their interest in the final film. It seems that X's shooting created a situation that constituted both a scientific and artistic experiment. It is probably this experimental characteristic in X's project that formed the basis for a mutual understanding and fascination...The film as end product on the other hand seemed to clearly belong to the artistic domain from the point of view of most of the scientists.

Several interviewees made reference to potentially interested biomedical sector audiences that they thought remained unaware of Sciart and the activities that the scheme had funded. This suggests the potential for the Trust to engage in market research that could help to identify niche sections of the healthcare profession to whom information about funded projects could appropriately be targeted.

There is a section of the Royal College of Medicine which has a sort of medical arts society...that kind of forum has not to my knowledge engaged explicitly with Sciart. So the penetration of Sciart is not as full as it might be within science circles...

There may be more potential for the dissemination of the outcomes of Sciart in medical training courses. There are a lot of these courses, but they don't know of each other and have only limited knowledge of wider practice, such as the outcomes and example of Sciart work. So, there are convinced medical practitioners out there who would benefit from more awareness of what Sciart has achieved.

Three of the case study projects clearly demonstrated that the outcomes and by-products of Sciart-funded projects could hold a particular interest for specific target groups within the biomedical profession, as well as for a general public audience. In one case a film that received accolades on the international festival circuit had also been incorporated successfully into training programmes for individuals working in the healthcare sector; in another, healthcare professionals were engaged in the project as the voluntary subjects of a speculative experiment; in a third project, the interview data that had been collected as the raw material for a film had been preserved and repackaged as a unique resource of archival information that can be made available in perpetuity to healthcare professionals and researchers.

It is a much more interesting stimulus for them to have an arty film than a didactic teaching film. There are a lot of didactic videos out there for teaching people about dementia, and it is more exciting that this film has not just been made to put across pre-selected messages; it allows the viewer to think for themselves...

All of the participants in the project were mental health professionals from the hospital...We wanted to give the mental health professionals a similar experience to that of the patients, for purposes of empathy, and as a bit of commentary on what it is to participate in a scientific study. Just putting the professionals in the position that patients so often find themselves was interesting in itself...All of them were involved in research in some way, and the experiment really provided an opportunity to raise questions about the social dimensions of their research, and about the location of science in the community...

An important outcome is the fact that we now have all these interviews with the scientists involved; that is a hugely important science history resource...We have the full interviews and transcripts and that can be a tremendous ongoing resource.

9.5.1 Sciart-funded projects as a mediator of the patient perspective

A noteworthy finding of the case study analysis and the expert interviews was that a number of Sciart-funded projects were felt to have played a valuable role in stimulating and enhancing communication and understanding between, on the one hand, patients and patients' groups, and on the other hand, healthcare professionals and biomedical researchers. In some instances artists were felt to have helped to create an important bridge between clinicians and their patients, and to have helped to find expression for previously hidden aspects of the patient experience. In at least one case this process was felt to have led to indirect clinical benefits.

There are quite a lot of Sciart projects where the third party is the patient and the artist has turned out to be a very good mediator in the clinical relationship...

The individuals being operated on...were not really involved in the discussion of their own medical condition. We wanted to empower them by discussing with the patients themselves how they would like to look...for Y and his team it was a real revelation for the patients to become involved in this way in the decision-making

process. As a result, the patients felt that they were involved in a dialogue, rather than being involved on the sharp end of a monologue...

[The Sciart project] has enabled me to find out more about patients and their families. And what I have been able to do is to encourage amongst other scientists a greater level of interaction with patients and families...Many of the scientists there had been working in the field for many years but they had never actually met anyone with the disease. And so bringing the patients and the scientists together has benefited the field in general; partly in terms of motivation, but also in getting them to understand...the major problems from the patients' perspective. If you speak to families you find that they have other concerns, which from the research perspective had previously been rejected, and that is now becoming more of a focus for new research. So there are clinical benefits that have arisen from the project, albeit in a more indirect kind of way.

One of the Sciart-funded case study projects was felt to have had the benefit of demonstrating to target audiences of patients' groups the passion with which biomedical researchers, whom the public seldom gets to see, conduct their search for new cures.

For the patient group populations to see their excitement and to realise the fact that these people were putting their heart and soul into their research for the benefit of patients must have been really reassuring.

9.6 Sciart and 'arts and health'

A significant, if unintended, consequence of the Sciart scheme is that it has been deemed to have been a very successful funder of an area of arts practice that tends to be referred to as 'arts and health' or 'arts for health'. Advocates of this type of arts practice stress the direct and indirect healthcare benefits that they allege can be attributed to it. It is an area of activity that has been given significant attention in recent years by arts policy and funding bodies such as Arts Council England (ACE), partly in an attempt to attract more funding from non-arts sources to support and encourage arts workers to operate in this field.

A clear example of how Sciart has been identified and co-opted as a significant force within this field is the 2007 research report *Mapping Arts, Health and Higher Education Collaborative Projects in London*, commissioned by the London Centre for Arts and Creative Enterprise and ACE London. The research was intended to help to build "a substantial and robust evidence base which will convince the medical profession, Government spending departments (particularly the Department of Health and HM Treasury) and the arts sector of the value of arts interventions in health".⁴⁰ The *Mapping Arts* research identified 29 projects in arts, health and Higher Education in London since 2002, nearly half of which were Trust-funded. The *Mapping Arts* report included 12 in-depth case studies, five of which had received Sciart funding.

The report's authors, Jill Sheridan and Professor Linda Pring, have concluded that:

The growth of interest and activity in this area wouldn't have happened without the Wellcome Trust financial input. Our research has shown that Sciart has had a major impact just in terms of the volume of activity that is happening in London in this area. Five of the twelve case studies featured in the Mapping Arts research received a significant, and usually a major, proportion of their funding from this scheme. Along with the Arts

⁴⁰ Sheridan and Pring (2007), p. 6.

*Council, the Wellcome Trust is easily the most important funder of arts, health and HE collaborations in London.*⁴¹

Perhaps surprisingly, given the mission of the Trust, the instrumental use of the arts as a means of improving health and wellbeing has never been an explicit aim or claim made for the Sciart scheme. Indeed, from the point of view of many of the artists interviewed for the Sciart evaluation this was felt to be one of the scheme's virtues. As Professor Pring acknowledged:

*Sciart projects have definitely helped to raise awareness of the importance and relevance of arts in health contexts. However not all artists, even those working on Sciart projects, want to be labelled as specialists in working in this field. They are often very sensitive about that. They are artists first, who happen to have an interest in an area of science or of medicine.*⁴²

It is important to make reference in this report to the fact that, whatever its intentions, the Trust and in particular its Sciart scheme have been credited as being responsible for helping to contribute to a growth of interest and activity in this area of 'arts and health'.

⁴¹ From an unpublished interview with Paul Glinkowski, 21 November 2007.

⁴² Ibid.

Chapter 10: Sciart's impact on the wider culture of art–science collaboration

- Sciart enabled the development of a critical mass of practitioners and of projects, which has helped interdisciplinary work in the art and science field to become widely recognised.
- The Sciart funding consortium was a fruitful and influential experiment in cooperative arts funding.
- The example set by the Wellcome Trust and by the Sciart consortium encouraged other funders to begin to support projects in the science–art area.
- Sciart had been valuable in helping to crystallise and to exemplify transdisciplinary research.
- Sciart projects have acted as a 'seed' for future collaborations.
- The Sciart scheme overall had been a valuable catalyst for many new relationships to develop, at both an individual and an institutional level.
- The Wellcome Trust could play a greater role to broker partnerships between the arts and science.
- The Sciart scheme and Sciart-funded projects have attracted international attention and are seen to be innovative and influential.

10.1 The spread of Sciart's influence

The interview testimony of both external commentators and of project participants suggested that Sciart projects had far-reaching impacts on the wider culture and context for art–science collaboration. A biological analogy for how its influence was thought to have spread was the process of osmosis,⁴³ whereby the growth of influence is thought to have been effected as awareness of Sciart-funded practices seeped gradually into the general culture of art and of science

It is in the nature of both science and art that they are practices that continue and evolve. One artist's output will influence the output of other artists, similarly with scientists. So individual practices funded by Sciart will go on to impact on their field in that way...

Sciart is about specific outputs, but more importantly it is about contributing to the wider practice of art and science and that practice is a continuous activity, a series of commas rather than full stops. So that contribution to practice in the larger sense is what is really important about the Sciart scheme.

⁴³ The Encarta online dictionary offers the following non-technical definition of osmosis, which seems to fit the situation of Sciart, as described by expert commentators: "the gradual, often unconscious, absorption of knowledge or ideas through continual exposure rather than deliberate learning" (encarta.msn.com/dictionary_/osmosis.html [accessed 10 May 2008]).

A specific instance of this kind of spread, motivated by calculatedly pragmatic interests, is the example of an Oxford college that was sufficiently impressed by the presence and achievements of Sciart-funded projects in a neighbouring faculty to want to host one of its own. Rather than osmosis, perhaps the better biological analogy in this instance would be that of contagion.

Following the success of the Catherine Yass and the Harvey and Ackroyd projects, I was approached by the biochemistry department who said: 'we've seen what happened over at the school of pathology and we'd like to do the same at the department of biochemistry'...To attract high-calibre students and researchers, one strategy for a school or department is to provide a really welcoming and stimulating working environment, and the biochemists have said to me that they see a real function for art in that equation...that is a really tangible example of how the wider culture has been influenced by the example of Sciart.

Over time, as more and more projects were funded and the results came to be disseminated, there was a sense that a mass of activity had built up that could begin to have a more concerted influence. It was noted that the scheme had attracted so many proposals overall that even a proportion of those projects that did not gain Sciart funding would, nonetheless, have gone on to generate activity in the art–science area.

Through enabling a critical mass to develop, it did influence the development of a field of work...From a nebulous body of projects, it developed into something that felt more substantial. Internally that was recognised at the Wellcome Trust through the commitment of more and more substantial funds once the consortium came to an end...

About 124 successful project have been selected out of probably around 2000 project proposals...Of those that were dreamed up there will be hundreds that will not have gone on to achieve anything whatsoever. You will probably have another 250 where something will have come from those initial proposals.

This suggestion seems to be supported by the evidence of the survey carried out as part of this evaluation into the experiences of both successful and unsuccessful applicants to the Sciart scheme. About half of the unsuccessful applicants who responded reported that steps had been taken to obtain alternative funding for their proposal and a further third said that their project had gone ahead – albeit often in a reduced, or modified form. Even the survey respondents that had not continued with their projects tended to report that they were 'on hold', rather than abandoned.

Yes we still did it, on a reduced budget and with additional funds raised from elsewhere...

We received some funding from the Arts Council instead but it meant that the project was compromised...

We did it anyway, however on a smaller scale, and without funding, the whole team worked voluntarily, but it caused huge pressure in the group.

Returning to the views of interviewees (rather than the survey participants), there was a general sense that Sciart had provided a timely and authoritative example for other potential funders and would-be practitioners in this area to follow.

Without Sciart the science–art engagement would not have happened as fast and as well. It came in just at the right time. It enabled artists and scientists to realise their ideas and it paved the way for other funders to follow their example. The Wellcome Trust has a very good reputation for what it does and everyone wants to

be its partner. If it comes in and does something well, everyone will notice and respect it. In that sense it must have had a far-reaching impact, helping to establish a sense of credibility for the field.

10.2 The Sciart consortium: an example to other funders

The influence of Sciart on other funders was most notable during the second phase of the scheme, from 1999 to 2002. Encouraged by the achievements of the projects supported by the first two rounds of Sciart – which were funded and managed solely by the Trust – a consortium of influential public- and private-sector funders joined forces to relaunch the scheme with an expanded remit that would allow it to embrace all of the arts (initially its focus had been on the visual) and all of the sciences, rather than just the biomedical sciences. Along with the Trust, the funding consortium included: the Arts Council of England (renamed Arts Council England in 2003), the Gulbenkian Foundation, the National Endowment for Sport, Technology and the Arts, the British Council and, for the first year of the consortium only, the Scottish Arts Council.

There was a perception that, along with a boost in the resources available to Sciart,⁴⁴ the consortium approach had brought certain other advantages to the scheme.

There were strengths around the consortium approach for the middle three years. That was to do with the number and the range of voices involved in the development of the criteria and of the selection process. It also enabled there to be some buy-in and communication of the value of it across both private trusts and public-sector funders, and into scientific contexts beyond the biomedical realm of the Wellcome Trust.

A significant success ascribed to the coming together of the consortium was the fact that the Sciart scheme was able to continue at all. It was observed that without the ‘buy-in’ of the external funding partners and the endorsement that having them on board brought to the scheme, the Trust might not have had the confidence to continue to invest in Sciart.

[The Sciart scheme] might have died were it not for the public demonstration of faith of the funders in the consortium. That helped to embed the value of the scheme in the thinking of the Wellcome Trust. I think it's just fantastic that a science funder can now have an art gallery and an arts funding programme that no longer needs to retain the label of Sciart (science and art) to justify itself.

The differences of interest and of mission and the difficulties of coordination that resulted from the legal arrangements governing the different partners meant, however, that the consortium would always find it difficult to sustain itself over the longer term.

The nightmare of the consortium was that the workings of it were very tricky as everyone had a different constitution. The Arts Council wanted to draw up a common constitution but none of our lawyers would agree to that. It meant that instead of us all giving our money to the Wellcome Trust, it had to be allocated on an individual project basis. It was made to work but only because the project manager was effective at horse-trading to decide who would fund what.

The period of consortium working did, nonetheless, enable each of the partner funders to test the water and to define their own particular areas of interest within the broad framework of art–science collaboration.

⁴⁴ The total value of the awards made per year more than doubled during the three years of the Sciart consortium, from an average of £90 000 in the first two years of the scheme to an average of nearly £190 000 per year during the three-year consortium period.

This allowed several of them to go off and create their own variations on the Sciart theme, sometimes in partnership with other funders, once the consortium had disbanded.

My interest was 'what are artists doing about this?', theirs was more about the public engagement in science aspect... That helped to set up a healthy ecology of funding for when NESTA and the Arts Council came on board. And the consortium phase went on to influence the HE funding councils to take an interest. All of that came out of the fact that it was all 'in the air'. That is a good model of funding: that artists could come to us first for seed funding and then could progress to the Wellcome and to other funders...

In the end the consortium broke up because each of the partner's interests was different and each wanted to pursue the next stage in their different ways. The Wellcome Trust had set the scene and established the need for the funding. As that evolved, each organisation wanted its money to be spent on slightly different things. So it was a period of positioning: each signing up to the Wellcome Trust's general vision for Sciart, and then beginning to differentiate their particular interest within that general field.

There was a view that one important effect of the consortium was to confirm the Sciart scheme as an arts funding programme, whereas it had been suggested that in its earliest incarnation Sciart was intended as a more open testing-ground for proposals from science and the arts.

The consortium were typical arts funders. And they never saw the scheme in the same way as Wellcome Trust. They viewed it as arts sponsorship and Wellcome Trust always viewed it as something different: testing new ground...not specifically after works of art, we did not know what we would get, we were just dangling a carrot and saying 'OK, let's see what happens'.

Although the dissolution of the Sciart consortium was regarded as inevitable – and not a bad thing – there was a certain regret that its break-up had not been planned in such a way that it could have allowed the dialogue between the partners to have continued in a more structured way than proved to be the case.

It was a shame that the consortium broke up. It did have a sell-by date, but it wasn't a very coordinated break-up. They all went on to do their own things, but it would have been sensible for the consortium to have come back together every now and again just to catch up on what we all were doing... That was a missed opportunity.

There was general agreement that the consortium phase of Sciart, in particular, had been influential in raising the profile of science and arts collaboration and had thereby increased the prospects of more activity taking place in this area of disciplinary crossover.

A number of respectable funding organisations were putting money in and therefore saying that 'we think this is an area of interest where there can be creative developments'. So, it was a kind of establishment force that helped to create an atmosphere of credibility around the idea of scientists and artists working together... So, there were consequences associated with these weighty organisations being seen to be taking this area of interdisciplinarity seriously.

An important area of influence was on other funding bodies. Several examples were given of funders (particularly arts-sector funders) who, sometimes in partnership with agencies who had been part of the Sciart consortium, were felt to have been influenced by the example of Sciart to fund work in this area.

Sciart did play a significant role in stimulating funders to enter into this territory... They also developed a simple, clear communications strategy, and that helped to raise the profile of the programme so that Sciart quickly gained in popularity. Their first funded projects effectively established the Sciart brand... Now there

are a range of new funding initiatives, involving research councils and arts councils, targeted at this area of collaboration...

The AHRC [Arts and Humanities Research Council] initiative is relevant here. ACE [Arts Council England] brought them in to a joint scheme offering quite generous sums, up to £30 000 for artists to undertake process-based research. They were clearly inspired by Sciart...That was a fantastic outcome of Sciart...

Science–art funding opportunities are now much more widely available and better known; that is probably a fallout of Sciart. I'm not sure to what extent that is true of science research funders, but arts funders are certainly more prepared to fund activity in that area.

One way in which more funding was felt to have been attracted to this area of activity was as follow-on funding for projects that had been seed-funded by a Sciart award and that had proved themselves to have sufficient merit and potential to attract additional funding from other sources.

Because of awards like this, there are now some very successful science–art projects. That is essential to be able to demonstrate track record, and therefore to make a case for further funding for this kind of activity. Nearly all the projects featured in Mapping Arts⁴⁵ said that they had led on to further projects for the partners involved, for which funding was more possible because of the work already accomplished.

Sciart was felt possibly to have had an influence on the culture of other funders in more than the crude sense of encouraging more investment for this general area of activity from a wider range of sources: it was suggested that the example of the Sciart scheme's emphasis on process and on experiment might also have altered ideas about the type of activity, not just the subject area, that funders might be prepared to allocate resources to.

[Experiment and R&D Awards] are quite useful those schemes, and research funders like the AHRC might now be picking up on those notions that it is possible have a more open view of what research, is or can be – something slightly more fluid.

Paradoxically, the perceived success of Sciart as an inspiration for other funders to follow had had the effect on one private-sector funder (which preferred to fund activity that other funders considered 'hard to fund') of encouraging it to withdraw its funding for art–science collaborations.

I no longer have a discrete Sciart collaboration scheme. That no longer seems necessary. It's out there, so I am no longer intending to support science–art collaborations.

10.3 The influence of Sciart on the wider culture of research

Related to the suggestion that Sciart had encouraged higher education funders to consider supporting interdisciplinary working between the arts and the sciences, there was a view that the scheme had been influential in helping to demonstrate, and to shift institutional perceptions about, what might be understood by the concept of 'research' at a time when this concept was being reviewed as a result of structural changes within academia.

⁴⁵ *Mapping Arts* identified 29 projects in arts, health and higher education in London that had taken place since 2002, nearly half of which were Wellcome Trust-funded.

The relatively recent transformation of the AHRB [Arts and Humanities Research Board] into the AHRC has triggered a review within the research council fraternity as a whole of what is actually meant by 'research'...and a growing argument in favour of experimental practice as a valid research process is something that has been helped by the Sciart project and the processes and methods that it has encouraged...So, it is having to deal with a redefinition of what research might be, and Sciart has given it some methodological background to assist that redefinition.

As well as having an imputed influence on the culture of research in the UK at a definitional level, a number of commentators and project participants referred to the practical influence that Sciart funding had had on helping to open up the doors to previously hermetic places of research, particularly within the sciences.

It has given a lot more people access to those sealed-off areas where knowledge is produced...Scientific institutions seem to be more accessible than they were...There has been a degree of shift over the last ten years.

10.4 The influence of Sciart on the wider culture of art

A degree of influence was ascribed to Sciart in terms of its having helped – through its alignment of art with themes from biomedical science – the general culture of contemporary art to become, and to show itself to be, more engaged with the public and social concerns of the day.

Art is more socially engaged and 'out there' now than it would have been back in the mid-1990s, and Sciart was part of that general process by which art entered the wider public domain...and that those wider ideas can provide a kind of stepping stone to an appreciation of art is quite a useful thing. Sciart can take some of the credit for that.

Through the process over time of developing precedents and examples it was felt that Sciart had helped to precipitate a shift within the general consciousness of the wider artistic community about what might now be possible in terms of generating new artistic practice focused on scientific themes and contexts.

I think more artists were interested in exploring scientific ideas at the end of the period. There is a sense that it has had quite an important impact on artistic practice, in opening up another area of ideas. Artists probably feel a lot more confident now in approaching this area of opportunity because of the body of knowledge and work that is now out there representing this field of activity...

The field has immensely loosened up and the idea of an artist working with science is much more readily accepted and understood. The intellectual context for art practice has changed.

It was also felt that Sciart had helped to alter perceptions within the scientific community in the UK of what contemporary art might be, and of how it might relate to the activities of science.

A lot of people, including at the Wellcome Trust, just saw art as being concerned with the beautiful and the decorative. But fortunately...the Wellcome Trust were prepared to employ younger arts specialists, who helped them to begin to accept contemporary art as it was actually being practiced by the YBAs [Young British Artists] and others...And that became true of a younger breed of scientists who now accept contemporary art as part of our culture. So the two constituencies have got closer together. Sciart was not wholly responsible, but it helped to contribute.

10.5 The influence of Sciart on the wider culture of science

It was felt that Sciart had helped to create an ambience wherein the activities of science could more easily percolate into the public domain.

The idea of art in science museums and of science in drama productions is much more established now than ten years ago, especially within the science museums, education and public engagement constituencies. Again that is partly funding-driven, and with the funding goes legitimisation. It creates a kind of atmosphere that this is where things are happening. Not just Wellcome Trust, but ACE and AHRC, and EPSRC [Engineering and Physical Sciences Research Council]. I think their funding is related to the Wellcome Trust example...It has been a smallish but significant cultural movement, perhaps with the Wellcome Trust as a catalyst.

Sciart-funded activities had also helped to bring into view the public and social dimensions of scientific enquiry, making them both more visible and more open to scrutiny and critique.

Sciart has been very influential on aspects of that loosening of the distance from the wider cultural context. It has showed that there are aesthetic and social and material aspects to the development of scientific work, and that it isn't so inalienably different from other forms of imaginative work...

It has played a small part in encouraging an interest in the meta-activities of science; that is, not a focus on a particular branch of science such as genetics or cell biology, but an interest in its techniques, and in the way that it creates and distributes knowledge. There is a great interest now in that kind of meta-activity, and I would say also in a notion of institutional critique, which is often linked to all the money that is available for science – to the way that the science is being skewed by the hidden interests of power.

Interviewees attested to various ways in which Sciart-funded activity had had a positive influence on helping agencies concerned with the public's engagement with science to deliver their mission: through enhancing the 'exhibition offer', through bringing in new audiences and through attracting publicity.

As a science museum, I would say that Sciart has helped to give us an acceptable diversity to our exhibition programme. We would have been much more out on a limb without that programme. It certainly helped us to change our exhibition offer...

We've found during the last ten years that art can provide us with a way of attracting audiences to the history of science...We now get a lot of offers from artists wanting to do a show here...We have sort of stumbled into this area. And that is partly because of the Sciart scheme. It is obviously an area of interest in the current art world and so I get a lot of offers at the moment, more than I can cope with...

[Sciart] has given us the confidence to do things in the museum that might otherwise be regarded as not worthwhile...Some of our art interventions will seem totally weird to our traditional history of science audience. The element of fantasy in art is particularly challenging to audiences used to dealing with scientific fact. The fact that Sciart has had a visible presence, and has got publicity, and that people like the Wellcome Trust and the Gulbenkian are associated with it, has been very helpful to us. It has given us a sense of being part of a bigger movement in this territory. We might indeed never have gone in that direction without that supportive context...And it has been responsible for making the media receptive to what we have done; that has been possible because there is a recognisable 'Sciart' category.

In some instances, Sciart was thought to have given a spur to individuals working within the science field to reorient their practice away from their core research and towards public engagement focused activities, and to have provided a new sense of legitimacy for this kind of work.

I did know of scientists who were inspired enough to change track...It might have had an influence on the wider culture of science in so far as it made that shift of interest seem more possible; that to move away from the core science was an interesting or respectable thing to do. So it was, in that way, creating an environment or influence that was changing scientists' perception of things...

It helped to make it acceptable that we should be involved in this sort of thing [science communication]...Before, it was seen as a bit out on one side, but now it is easier for us to present it as real work.

Evidence from the focus group suggested that frequently there were 'dual' outputs to Sciart-funded projects, with outcomes being publicised and presented both as artworks but also in the context of scientific or medical research. These cases seemed to reflect a general move in recent years towards more aesthetic modes of science communication. The term 'applied scientific exhibitions' was used by one artist to describe the way that art and science sometimes blended in a presentation to form a new 'tool' for the investigation and understanding of scientific issues.

10.6 The influence of Sciart on the wider culture of interdisciplinarity and collaboration

Expert commentators from the science field felt that Sciart had an influence on providing the scientific community with practical models for interdisciplinary working at a time when there was much talk about interdisciplinarity but little delivery.

In the late 1990s and early 2000s there was a great deal of talk about interdisciplinary collaboration in the science world, but virtually no attempts to make it work in practice. The science research councils were very poor at collaborating with each other to make this work. University departments, likewise, were poor at promoting collaboration. At the structural level in the sciences there was a lot of talk but very little activity. Sciart and the kind of work that it encouraged has had an influence on shifting that structure, both within the research councils' work and within the university field. So it has had an influence on the structures of science and that will be a genuine benefit, in the longer term, to scientific innovation.

A similar situation was felt also to have pertained in the arts field in the mid-1990s and, again, Sciart was felt to have been influential in providing funding and a framework of opportunity for interdisciplinary collaboration to take place.

There was a mood in the late 1990s, at an arts policy level, towards promoting interdisciplinarity. At science policy level too, one was increasingly hearing that groundbreaking science was being done at the interface between different scientific disciplines. This project was unique in building a bridge between the 'two cultures', but within the separate cultures the notion of interdisciplinarity was already growing both fashionable and influential at policy level. At the time, both arts and science councils were talking about interdisciplinarity, but they were not talking to each other about it. It was a hermetic conversation...The significance of Sciart was that it became a laboratory where this kind of cross-disciplinary experimentation could be tried out...

Sciart stood out on a limb and said 'here's a pot of money for artists and scientists to work together'. There wasn't at that time any similar structure either in the UK or internationally to encourage transdisciplinary work, although there was a lot of rhetoric about it...

Sciart showed practical examples of interdisciplinary activity happening and being of value at a time when the policy was merely rhetorical and wasn't about practical delivery...It is certainly the case that the funding structures in the arts and sciences are measurably more conducive to collaborative activity now.

The decade of interdisciplinary practice that Sciart had helped to foster was felt to have led if not to a dismantling then certainly to a loosening-up of the barriers that were felt previously to have prohibited artists from working together with scientists.

There are now some good examples for others to follow. The legacy is that artists and scientists are now beginning to come together much more casually and Sciart has been instrumental in breaking down those barriers and allowing those collaborations to take place.

10.7 Redressing the imbalance between art and science

Sciart was thought to have played a role in helping to challenge an assumption, felt to operate at a societal level, that in the hierarchy of socially valuable and esteemed activities the arts were regarded as an inferior relation to the sciences. By placing an emphasis on mutual collaboration, Sciart had helped to re-emphasise that each half of the 'two cultures' equation was a serious area of knowledge generation in its own right with its own disciplinary and professional norms.

The idea that science is the important partner in the science-art equation, and that the scientist partner is god, that is the general underlying social assumption...Sciart went some of the way towards dispelling that tendency, but there is more to be done to create a greater sense of equal value between the two...Sciart was a programme that addressed the relative knowledge hierarchy and power relationships that operate at a societal level...I think Sciart did a very good job of at least highlighting that assumption and creating a public forum for addressing it.

Part of the perceived inequality between the professional fields of the arts and of the sciences was attributed to the fact that, compared to scientists who tended to operate within recognised and publicly valorised institutions, artists more often than not are sole operators, lacking an institutional identity. Sciart had provided an unusual framework within which autonomous artists could work with a sense of parity with institutionally based scientists.

Generally, somewhere there is an inequality built in. Artists are often not within institutions, which means that they can lack a sense of research authority. That is beginning to change...there is the tendency towards scientific institutions taking the lead, because of their status and authority with respect to the non-affiliated artists, and of their relation to, and culture of applying for, research funding.

Some of the arts sector interviewees felt strongly that, in an increasingly secular age, science had come to assume in the public consciousness something approaching a monopoly of truth and of responsibility for righting the world's ills. This was an inimical situation for society to have arrived at, and one that could benefit from the counter influence of the arts. Sciart was felt to have provided a context within which artists could reassert an alternative narrative that could challenge the perceived hegemony of science.

I think something quite damaging has happened with the public's perception of how things are with the Earth. They think 'well the scientists will deal with all that' and they just blank it out. It's like a delegation of responsibility for the world just to the scientists. Artists can help to reclaim that. The world becomes much more interesting the more you know of the story, which is not necessarily just the scientific one. But you don't want an art project to be too overburdened with all that information. Our job as artists is to simplify that, but without sacrificing the depth...

We live in an age that increasingly believes that, in the absence of a god, science can explain everything, but in fact it seems capable of explaining less and less. Science would say that that is just because it hasn't managed to discover everything yet. In that intellectual climate, Sciart has a lot to offer. We are in an age where the only truth is science, but actually the increase in knowledge in the future is I think going to lie in that place between science and art.

10.8 A catalyst for social and professional interaction

An important dimension of the collaborations fostered by Sciart was the sociability engendered. There was much evidence – from an analysis of the case studies, from the testimony of external commentators, from the focus group discussion, and from the survey of successful and unsuccessful applicants for Sciart funding – that the projects that Sciart had supported had led to new contacts, relationships and networks being forged at both an individual and an institutional level. Both successful and unsuccessful applicants for funding reported that as a result of Sciart they had been led to new forms of collaboration: 81 per cent of the successful applicants either agreed or strongly agreed that “the Sciart project has led me to new forms of collaboration”; 46 per cent of unsuccessful applicants either agreed or strongly agreed with the same proposition. Moreover, a large majority of the successful applicants reported that the contacts or networks that they had established through their project had since been maintained: 81 per cent indicated this to be the case.

The ten Sciart-funded case study projects showed that each collaboration had involved or helped to precipitate a range of new relationships, or else to have consolidated existing ones. Some of the relationships formed were ephemeral, some were ongoing; some were professional, some were more personal in character; some were more local in their reach, others were international.

A majority of project participants mentioned the value of their Sciart project for enabling a new relationship to be forged with venues, producers or artists. In some cases valuable existing relationships were also able to be extended.

The project deepened our relationship with [the curator], which has become important and ongoing...

The relationships with the performers was deepened. I went on to work with X on at least three other film projects since then. That has been an important ongoing collaboration. She sort of became my muse, you could say.

Both scientists and artists revealed that, beyond the life of their Sciart-funded activity, their project had helped to open doors to further opportunities to form useful partnerships and relationships.

The lab is frequently contacted by artists who are investigating the possibility of conducting a collaborative project...The project with X has doubtlessly contributed to the establishment of the lab as a node in this network of art science contacts...

(Scientist)

It had given me the confidence to approach an arts group, who organised a series of really successful public engagement events. Without the experience of the [Sciart] project I'm not sure that I would have had the courage of my convictions to set up that...I don't think it would even have occurred to me...
(Scientist)

I have become involved now with a performing arts group. They contacted me through my involvement with the Sciart project...
(Scientist)

It led to a relationship with a gallerist in London, who has given me a commission to work on.
(Artist)

Some scientists reported that professional relationships with colleagues either at their place of work or in their field of research had altered and/or been enhanced by their participation in Sciart activities.

My relationship with the technician here...was strengthened and changed because of working on this project. Before, it was more about line management, but now we are both interested in the artistic use of images. We now have a much better website, with lots of images posted on it as a gallery. We realise that we attract a lot of interest through those images...

My relationship to the director here has moved on. When he heard we had this Sciart award it gave me some credibility...

The project has broadened my network of contacts in terms of the research into other related diseases. Two of the people we interviewed had done very similar work into two different disorders but had not ever actually met each other, so it was interesting for them to be able to talk about their related areas of interest.

In some cases, Sciart projects had helped new relationships to be established between healthcare professionals (clinicians and researchers) and their user groups.

It has absolutely strengthened the levels of interaction between the patient groups and the families and the scientists, and that has been a major success of the project...It has been an important glue in the process of bringing the scientists and the patients closer together.

Several interviewees mentioned that the relationship that had been established with the Trust and its employees had been a valuable outcome of their project.

The relationships with the Wellcome Trust were a positive outcome I don't see the Wellcome Trust as a faceless funding body. I've always enjoyed my conversations with them. I've found them interesting and supportive, and I value that...

The contact with the Wellcome Trust itself was quite important. I have since acted as a reviewer of other project proposals.

10.8.1 Network formation

Sciart was felt to have been valuable in helping networks to emerge and to come together on both an individual and an institutional basis. In the consortium phase, for example, it had provided the occasion for influential funding bodies who were more used to working independently to find common cause.

One legacy is about networking, because the consortium included other funding and development agencies, such as the Gulbenkian and the Arts Council. I got to know these people and we do keep in touch...That has been a good thing: that influential organisations got to know one another and institutional links were made that were probably quite important in the longer term.

A number of Sciart project participants referred to the importance of the networks that they felt had been opened up to them just by the fact of their participation in Sciart activity. It was suggested though that there was, perhaps, a need for more visible and formal networks to be developed that could help to nurture and to facilitate discussion and partnerships to develop between artists and scientists with an interest in collaborating across disciplines.

Wellcome Trust funding opened the door to a whole community that was also doing this type of work There was a moment of 'oh there are other people doing this stuff as well, it's not just me'...a whole network of people we hadn't known about who had an interest in this area. A sense of community was created through the Wellcome Trust. It provided a doorway...It was comforting to be part of a shared community. It did feel like this was possibly the start of something, in the late 1990s, that a new genre was taking off...

My involvement in the Sciart arena has moved from an external to an insider type involvement...It was a really good way of opening the door to it. That change in position first struck me when scientists started to come up to me and ask my advice about how they could get involved. So maybe there is an interest out there that could be tapped into more. It would be useful to provide pathways for scientists to enter conversations and develop projects with artists.

The focus group participants also commented on how Sciart had provided a 'social context' where discussions of transdisciplinary practice could occur. This had fostered informal networks, which had tended to continue beyond the life of the funded project; many indeed were still said to be active and productive.

Although in many instances Sciart had clearly acted as a catalyst and a spur to fruitful networking, there remained a sense that it could still sometimes be difficult for initial contacts to be made in this area of cross-disciplinary practice, and that perhaps the Trust could have played a more proactive role in helping to bring potential partners and collaborators together. This is perhaps a task that the Trust might wish to consider in relation to its successor arts funding programme.

A strength was its bottom-up nature. The openness of the scheme meant that collaborators were encouraged to go out and find each other; relationships weren't imposed or brokered in a hierarchical way...

I was vaguely aware that some artists and scientists were interacting, but I certainly didn't know any artists who I personally might interact with at that time...

It is difficult to reach out to the scientific community generally unless you have that initial contact. The question might be 'how can those kinds of chance encounters be facilitated?' For successful Sciart projects to emerge in the future, it is really important to create a context where artists and scientists can be brought together. That is a really important function that the Wellcome Trust at its new headquarters can precipitate.

10.9 International influence

Although the terms of reference of the Sciart scheme meant that funded activity had to be focused primarily on outcomes that would be presented in the UK, there was ample evidence that Sciart had in a variety of ways achieved an international reach. Chapter 8, 'Sciart and the public', illustrated the international reach that was achieved by a majority of the ten case study projects. This section considers briefly some of the additional ways in which the international influence of Sciart was discussed by interviewees.

At the level of individual projects, Sciart-funded activity often proved to be surprisingly far-reaching.

It [a Sciart-funded film] has reached a lot of people internationally, and was enthusiastically received by the overwhelming majority. It seems to have gone down particularly well in Australia, and we had some fascinating correspondence with a guy who runs a home for Inupiat elders in the Alaskan interior.

At a structural level, it was also considered that Sciart had gained visibility and credibility internationally as an important source of funding for cross-disciplinary work.

Sciart was internationally recognised as a scheme which was doing things at the science–art interface, one of two significant international initiatives, along with Leonardo.

An interesting point was made regarding how the resources made available through Sciart had helped to encourage the nature of art–science collaboration in this country to develop in a certain direction that may not have mirrored developments elsewhere. It was proposed that, partly because of Sciart, the UK had developed a distinctive culture wherein the arts had dealt with science at the level of *ideas*, rather than at the more instrumental and technological level that was felt to have been the case elsewhere.

It offers so much money that it has had a huge impact...In other countries the development of this area of art and science has tended to emerge from the overlap of art and technology, where the interest in science has come primarily through its usefulness as a tool for artistic experimentation. The interest in engaging with science critically has emerged much earlier over here than was the case in America and Europe...Sciart emphasised the idea of artists engaging with science in terms of its ideas, rather than thinking of science as just being about the latest technological media.

One significant instance was reported regarding how Sciart had failed to achieve the international reach that had been anticipated. The British Council joined the Sciart funding consortium in the expectation that Sciart-funded projects would generate outcomes that its Visual Arts Department could help to tour overseas.⁴⁶ This expectation remained unfulfilled.

The arts section of the British Council was interested in the touring potential of work made by contemporary artists that was dealing with scientific issues...[but] Primitive Streak⁴⁷ remains the only project that was toured abroad by the British Council.

⁴⁶ This was the basis of the British Council's interest as expressed formally in the funding agreement that it made with the Arts Council.

⁴⁷ Primitive Streak was funded in the very first round of Sciart in 1997, well before the British Council joined the Sciart consortium.

Chapter 11: Sciart and management

- The Wellcome Trust plays a supportive role in projects, but is also helpfully ‘hands-off’ in terms of its monitoring practices.
- Appropriately considered project management arrangements are key to the success of a project. Evidence of this needs to be demonstrated at the outset of a project, particularly for higher-value awards.
- Third-party project managers can often provide a useful link between participants based in the arts and those based in the sciences.

11.1 Management issues raised by interviewees

A number of issues were raised during the course of interviews pertaining to aspects of how either individual Sciart-funded projects or else the scheme itself were managed.

It was recognised by some of those who had been involved in judging applications to the Sciart scheme that management capacity should be an important element of the assessment process, particularly for higher-value Production Awards.

Unless artist–scientist collaborations were well managed, they could easily unravel. So, supervision was one of the things I was looking for, especially in Production grant applications. There needed to be regular audits of activity. That was less so with R&D grants.

However, the testimony of some of the award winners, including those who had received Production funding, implied that aspects of management had not always been carefully thought through at the time of application. It was suggested that their might be an argument for the Trust to scrutinise the management arrangements of higher-value projects more closely.

There wasn't enough thought given to what our curatorial and project management role should be relative to a project of this value. I should have spotted that and we should have been a bit clearer about that. The assessment process was very much geared towards the quality of the outcome. It might have been a little bit more enquiring as to how the project management element was being dealt with...

When it came to calling the shots about the key issues there was often a sense of compromise and of one side feeling slightly less clear than the other that we had gone down the right path. So neither party I suspect felt that they quite owned the project at the end of it. It was a good project, but there was a slight sense of a lack of ownership both on the part of the museum and on the part of X.

Arts production agencies or cultural venues of one kind or another had often played a significant management role in relation to projects, sometimes because they had been required to do so as a condition of the funding (in order that awards could be routed through an accountable organisation, rather than through an individual). Generally, though not always, this arrangement had worked well, and in at least one instance the production agency had been acknowledged as an important bridge and point of communication between the artist and the scientist involved.

The involvement of [the production agency] crystallised my role, and sort of made sure that I was involved in the final stage...I suppose I'm arguing for a kind of managerial or overview role in projects of this kind that can appreciate the different perspectives: of the artists, and of the scientists. So that was a very valuable link between the two camps.

11.2 The Wellcome Trust's management role

In terms of how the Sciart scheme was managed from an award recipient's point of view, in general the relationship between the funder and the funded was felt to have been a positive one. The flexibility and the relatively 'hands-off' nature of the relationship was often commented upon very favourably.

The Wellcome Trust has a really refreshing way of keeping bureaucracy to a minimum, which allows the development of ideas to be pursued to a maximum. That is really helpful. The bureaucracy of some funding can stifle the possibility of progress; it almost kills an idea for a project by requiring that you spell out to the letter what you are going to do at the beginning and then requires that you keep to that...That is really important, because you are trying to learn things from these projects and you don't learn things if you just do what you say you are going to do at the beginning.

Two instances were mentioned where the relationship was not felt to have been entirely satisfactory. In one case, the sense of interest and communication that had been built up in the earlier stages of the project was felt to have petered out at the point of full delivery, which was considered somewhat of a disappointment. This was attributed to a change of personnel at the Trust and also to the fact that the Sciart scheme was being wound down.

One of the problems that we faced at the end of the project was that our primary funding contact at the Wellcome Trust had moved on. The scheme was coming to an end, and attention didn't seem to be focused on what we were doing. I think it was such a large sum of money and so fundamental to what all the participants were doing, but one never quite knew the extent to which the Wellcome Trust wanted to be engaged in the process or not, and that made things slightly difficult...There was more funder interest in the beginning than at the end. I was being asked to wrap up the accounts and the relationship seemed just to peter out slightly.

In the other case, the applicant had felt encouraged to shift the direction of an R&D Award-funded project in a new direction on the advice of the Sciart programme officer. A subsequent application for Production Award funding that was tailored in accordance with feedback received from the officer was subsequently rejected on the basis that it did not fit well with the Sciart scheme's criteria. In this instance too, a change of personnel was felt to have contributed to difficulties of communication.

I have learned to be much more wary in how you talk to funders. Just talking to one person is probably a mistake; to put all your eggs in one basket...With hindsight it was more of a waste of people's time than a useful thing to have spent so much time working on. I wouldn't do it again if I knew the process would lead to the same outcome.

On the positive side, several interviewees commented on the enlightened interest taken in the scheme by those who had worked on it. Sciart officers were regarded not merely as functionaries but as well-informed individuals who were sensitive to the general intellectual climate in which the scheme operated.

The people who work on it have had a philosophical interest in it. They are interested in how it can influence the intellectual culture. There is an intellectual agenda there. It's not crude PR or just science advocacy. That's a strength.

The issue of officer capacity was discussed by some commentators. It was felt that the scheme manager could play a helpful and supportive role in relation to projects, but that their capacity to do so had sometimes been stretched. This strain on management capacity – rather than a calculated view that Experiment Awards had failed to live up to expectations (which the case study analysis conducted as part of this evaluation suggests was probably not the case) – was felt to have been a motivating factor for the discontinuation of this short-lived but popular strand of the Sciart scheme.

When Experiment projects were funded, in 2004, there were about 30 projects running at one time and there is a point there about the capacity of the people running the scheme to support the projects, particularly the small-scale ones involving early-career artists, or quite risky collaborations. If you undertake that range and amount of work, that comes with ramifications around the capacity needed to support them...The pump-priming to increase the number of early-stage collaborations was an important characteristic of Sciart, but that investment in the Experiment scheme soon came to an end, probably due to internal capacity issues at the Wellcome Trust rather than because of a consideration as to whether that was the best outcome for the artists involved...

Really robust R&D happens to enable the participants to move on to undertake a project of major significance. Maybe that emphasis is lacking a bit at the moment, either in the officer role or in the selection process. Maybe support at the earlier stage of an application might help. That might be around pre-application, or around a previous phase of a project. Or maybe it is about rethinking the level of funding offered, to fund more projects at a lower level.

Chapter 12: In conclusion

- Interviewees made a number of suggestions regarding how the achievements of Sciart could be built upon or improved.
- The Wellcome Trust could play a stronger role in supporting the dissemination of successful projects.
- The objectives of Sciart successor schemes should be clearly focused and should not try to achieve too many outcomes.
- Art forms other than visual arts and media need further encouragement to participate in arts and science projects.
- Ongoing evaluative and analytical research needs to be undertaken of the characteristics of effective arts and science projects and their impacts.

12.1 Suggestions made by interviewees

There were a number of instances where interviewees volunteered suggestions regarding how things might be altered and improved were the Wellcome Trust to wish to take forward elements of the Sciart funding scheme. Many of these suggestions seem to chime with observations recorded elsewhere in the evaluation report. It was decided, therefore, to reproduce them here, grouped together under a number of linked themes, as ideas that the Trust might wish to consider.

12.1.1 What should be funded

They ought to consider funding more work outside of the UK. They fund science outside the UK, but they don't generally fund art...There can be an international dimension to a Sciart project, but the project won't get funded unless there is a manifestation of it in the UK. For example they wouldn't fund an artist's residency in India. Maybe they should address that...

They could offer...the biomedical research studies that they are funding [the chance] to have an artistic component that expresses some aspect of the core research work. The costs would be for the artist to be involved...

They could fund more fellowships for artists. Artists are cheap compared with scientists...They might not be full-time, maybe three days a week...

Setting up things that are less product-focused, such as a sort of art and science lab where people need space and time and resources to come together and work. It's about the pre-production end: the generation and working out of ideas. But you just can't really set anything like that up within the terms of the Wellcome Trust scheme. We could be a little feeding ground to set ideas off that could then apply to the Trust for an award, getting people to the stage where they could write a credible application.

12.1.2 Maximising the reach of successful projects

The work is there now, but it could be being seen more widely. You could throw that back to the Wellcome Trust to say 'all this work has been produced and maybe there is a potential there for the Wellcome Trust to pick up on some of these projects that have had some limited success but that would take more of an ongoing commitment and/or resources to get shown around more'. They could say 'yes, let's do more to get it out there and shown more widely'...

It shouldn't just have to rely on the goodwill of the artists and the scientists to capitalise on what has been achieved. Once the money runs out, the public engagement activities from the scientist's perspective have diminishing returns. The work is still there, but it is now being underutilised. So the Wellcome Trust might want to think about how they could make more use of the finished product.

12.1.3 Encouraging parity of remuneration

Were the scheme to run again, I think there should be clearer guidelines established on this issue [of parity of remuneration between artists and scientists], not least because an acceptance of the principle of equal payment for work done would help to establish that a genuine interest was being evidenced by all collaborations.

12.1.4 Supporting projects to succeed

Maybe there is an argument for shifting the balance more towards R&D than Production...By funding fewer large-scale projects, officer time could be freed up to support the more limited number of high-value projects...

The same level of monitoring and scrutiny was required by the Wellcome Trust even for low-level funded projects, and I think there could be a more light-touch process that would enable that continuing level of investment in small scale projects [via Experiment] to continue to happen.

12.1.5 Spreading knowledge and catalysing networks

The role of the Sciart project manager was actually quite proactive and I think that that was important. So going forward I think that that should be preserved, or even enhanced. It is partly to do with being able to encourage networking and shared events, and peer awareness and the knowledge needed to develop those things.

12.2 A summary of strengths and weaknesses

Interviewees were asked to comment on the perceived 'strengths' and 'weaknesses' of the Sciart scheme. Reproduced below are a selection of quotes that encapsulate most succinctly the themes that emerged from their responses, and that also seemed to reflect and sum up the perceptions and observations recorded elsewhere in this report.

12.2.1 Strengths

I would say that every artist involved has had their work influenced as a result, in some instances majorly, in terms of their professional and creative development – even the ones that failed. The scientists have benefited from having more profile for what they do. The funding landscape has benefited from having the

example of Sciart. It is a British pioneer that doesn't exist in the same way anywhere else in the world, and wherever I go they say 'I wish we had a Wellcome Trust'...

The constituency of support that it brought together, the consortium itself, was a new and positive mode of collaboration – very different institutions coming together to collaborate; the timeliness of giving practical manifestation to what was at that juncture just an emerging field for policy...

The R&D and the risk-taking dimension of Sciart was what was really important about it, and that is where its key legacy resides...

It encouraged better mutual understanding of the disciplines and improved the Wellcome Trust's profile. The Wellcome Trust's kudos has really gone up in the outside world because of this...It has enabled them to achieve three things: to educate artists about science, educate scientists about art, and the public about both.

12.2.2 Weaknesses

It had too many objectives: ranging from the public engagement objective, to the objective of creating high-quality art work. That cluster of objectives overburdened the scheme...

It has sometimes encouraged proposals that have been funding-led, rather than collaboration-led...

There was perhaps a misunderstanding of how difficult it was going to be to precipitate a really fundamental connection between art and science. Maybe more work needed to be done to make sure that artists and scientists really understood each other's language. An artist is maybe working on a project full-time, where the scientists struggle to work on them part-time...

The dominance of visual and media arts [may have been a weakness]; the attempt to broaden it to the performing arts didn't really work...That could be to do with the fact that it was more in tune with the general trend of interest among visual artists, towards more issue- and ideas-based work. Perhaps it was felt to be less relevant to innovative theatre makers, dancers and other performers...

It has created this term 'Sciart' that I don't think is useful. I think the Wellcome Trust has been wise in ending the project, evaluating it, and then moving on.

12.3 Authors' recommendations

In response to the findings of the evaluation the following recommendations are made, to address the aims and needs identified by Sciart stakeholders, to provide strategic direction of future Trust arts–science funding initiatives, and to assist the decision making of other funders and policy makers.

1. Budgets and finances

1a) Dedicated funds should continue to be made available to support artists and scientists to collaborate, and to enable artists to work within scientific contexts and with science-influenced subject matter.

1b) Despite positive intentions, Sciart was felt to have contributed to a culture whereby artists were underpaid and had self-subsidised their work. In future schemes, clear guidelines should be

established regarding artists' rates of pay. Projects should be monitored to ensure that these are adhered to.

1c) The Trust should consider reintroducing a lower level of grant, along the lines of the Sciart Experiment Award. This was found to have been very successful at encouraging early stages speculative projects, many of which had produced impressive outcomes. It was also very popular with artists, and would help to ensure that emergent practitioners could continue to enter the science–art field.

1d) The administration of awards should remain flexible to allow for innovative practices, new processes and risk-taking to occur.

1e) Greater coordination between funding bodies could increase the overall impact of the arts–science field.

2. Presentation, performance and public engagement

2a) Excellent outcomes had been achieved that were often not fully capitalised upon due to a lack of resources at the end of the project. It is recommended that the Trust might create a contingency fund (10 per cent of the value of the awards given in a year), which could be used at the programme manager's discretion for initiatives – such as tours to additional venues or in alternative formats, or extra conference or education events – that would extend the reach of projects that had proved their success but for which demand was felt not to have been fully satisfied. 'Extension awards' had sometimes been made for Sciart projects, but it was not clear that they had been an effective mechanism for servicing this particular area of opportunity and need.

2b) Media coverage of individual science and arts projects was often extensive. However, unlike other award schemes, such as the Paul Hamlyn Awards for Artists, the various Jerwood arts prizes and the Northern Art Prize, the Trust was felt not to have capitalised on the potential to attract publicity to the awards as a whole. The Trust should consider how it could generate more awareness of, in particular, its higher-value awards, perhaps through some kind of annual awards event or ceremony.

2c) The research suggested that Sciart, although well recognised as a brand, was better known through a few isolated individual projects rather than as a concerted body of work; the mythology of Sciart (which was disproportionately negative) was more powerful than its reality. The Trust should build on the case studies developed for this evaluation to help to redress this imbalance by putting into the public domain more considered, reflective evidence of the outcomes that have been achieved by a range of Sciart-funded projects.

2d) The evaluation research suggested that a number of potentially receptive audience groups existed, particularly within the biomedical science community, that had not yet been introduced to Sciart-funded work. Research could be undertaken to find out about these audiences and appropriate marketing strategies developed to encourage their attendance at and participation in science–arts events.

3. Project management and quality monitoring

3a) The role of the Sciart project manager was an important factor in the success of the scheme. The project managers of any future science–arts schemes should capitalise on their knowledge of the field and of the factors that make successful collaborations to play a proactive advisory role, where it would be beneficial, in the development of projects.

3b) The project manager could also play an important role in helping to stimulate projects and partnerships by coordinating and funding events that help to bring potentially interested participants and partners together.

3c) To enable the above recommendations to happen it may be that extra management capacity would need to be created. Alternatively, the project-monitoring procedures could be reviewed and revised to ensure that lower-level grants' monitoring is as light-touch as possible (the evaluation found no evidence to suggest that Sciart awards were being used inappropriately or irresponsibly).

3d) An effective system of conscientious peer review had helped to ensure that well-considered and imaginative projects had been funded. This should be continued and the cohort of peer reviewers should be periodically rotated (perhaps drawing on participants from successful Sciart-funded projects) to ensure that the decision-making process does not stagnate.

3e) Quality monitoring guidelines that encourage reflection on both process and outcomes should be developed for use by the principal project partners. The guidelines should be flexible and indicative, rather than narrowly prescriptive.

4. Partnership and collaboration

4a) The research showed that it is rare for the impetus for science–art projects to come from scientists. More effective, targeted dissemination – to scientists and to scientific institutions – of information exemplifying the benefits of collaborating on projects with artists could help to address this.

4b) The research suggested that many scientists still have a limited apprehension of what collaborating with an artist might mean in practice ('dancing their data', or 'painting cancer cells' were perceptions attributed to scientists by artists). Targeted dissemination of information exemplifying the outcomes and processes involved in successful science–arts projects, which accentuates the experimental quality of the interactions, could help to address this.

4c) Where a third party, such as an arts producer or promoter, becomes the broker or budget holder for an artist-initiated project (as appears often to be the case), care should be taken at the proposal assessment stage to ensure that the principal project participants have the appropriate level of ownership of the project and have been properly involved in its planning.

4d) The Trust could play a more direct role in brokering partnerships and in helping, through the promotion of previous successful projects and collaborations, to encourage a climate of mutual respect between artists and scientists.

4e) Considerable expertise now resides in previous grantholders. This could be utilised through a system of mentors or 'critical friends' that could provide support mechanisms for emerging or high-risk collaborations between the arts and sciences.

4f) Not all successful Sciart projects involved a high degree of collaboration and the Trust should continue to support projects where the level of engagement between an artist and a scientist, a scientific institution, or scientific subject is considered to be at the appropriate level. To encourage imaginative and diverse proposals to emerge, a liberal interpretation should be applied to the concept 'biomedical science'.

5. Risk taking and innovation

5a) The Trust should continue not to require projects seeking research and development funding to pre-define their project outcomes, as this non-prescriptive approach is welcomed by applicants and helps to engender risk taking and innovation.

5b) The future vitality of science–arts interdisciplinary activity will depend on new participants entering the field. To help encourage this, learning materials based on the body of Sciart work funded to date should be developed for dissemination to schools, arts colleges and appropriate science faculties.

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