

# **The Arts-Like Science Centre**

**What are the implications of reframing science centres  
as arts organisations?**

**Andy Lloyd  
August 2009**

**Submitted as the research component of a Fellowship of the  
Clare Leadership Programme**

# **The Arts-Like Science Centre:**

## **What are the implications of reframing science centres as arts organisations?**

1. Introduction
2. What is the analogy and how can it be justified?
3. How do arts organisations validate and assess their work?
4. How do arts organisations differ structurally from science centres?
5. How do publics view arts organisations?
6. What lessons from the arts should science centres draw upon?
7. Bibliography

---

I would like to thank Andrew Newman, of the International Centre for Cultural and Heritage Studies, Newcastle University, for his advice and support while researching and writing this report. I would also like to thank Linda Conlon, of the Centre for Life for her support throughout my Fellowship. Thanks also to Sue Hoyle and the rest of the team at the Clore Leadership Programme, and the rest of the Clore 4's for the last 2 years of fascinating and illuminating discussion. There are many other people, too numerous to mention, with whom I have spoken over the last 2 years whose ideas have helped to shape my thinking. Hopefully those conversations can continue into the future.



This publication is licensed under a Creative Commons Attribution 2.0 UK: England & Wales Licence  
<http://creativecommons.org/licenses/by/2.0/uk/>

# Introduction

Science Centres are an odd sort of institution. They are a bit like museums insofar as they have exhibitions, but they don't hold collections and display relatively few objects. They often present theatrical performances and films, but they are not theatres or cinemas. Their origins lie in several fields: the epic trade show epitomised by Prince Albert's 1851 Great Exhibition, the lecture demonstration popularised by Michael Faraday at the Royal Institution and model demonstrations like the 1930's Children's Gallery at the Science Museum. One of the first modern science centres, the Exploratorium in San Francisco, was the product of a coming together of scientists and artists in the creative melting pot of 1960's California. Ultimately, science centres are like science centres, and are in need of a vocabulary of their own to describe themselves and to capture the value and impact of what they do.

In the UK the field has grown substantially since the first centre, Bristol's Exploratory, opened in 1986 to a diverse set of 81 centres across the UK in 2009<sup>1</sup>. Data from 2007<sup>2</sup> shows that:

- The UK science centres attract over 17 million visitors each year.
- In 2007 over 3 million school children visited a science centre on a school visit. Many took part in special workshops targeted specifically at their Key Stage to inspire them with science, technology, engineering and maths.
- The majority of science centres are charities, relying on fundraising, sponsorship and partnerships. Most also host weddings, birthday parties and corporate events for additional income.

The sector is closely aligned with formal education and research science, providing facilities and activities for school groups and offering platforms for scientists to meet the public. This study seeks to draw an analogy between science centres and the arts world to examine whether there are any informative parallels and whether the body of work in cultural studies contains lessons of which science centres should take heed.

---

<sup>1</sup> The Frontier Economics Report *Assessing the impact of Science Centres in England* (BIS, 2009) used data from "39 out of 81 science centres in the UK"

<sup>2</sup> Association of Science and Discovery Centres: [www.sciencecentres.org.uk/government-parliament/ecs-site-uk-press-release.html](http://www.sciencecentres.org.uk/government-parliament/ecs-site-uk-press-release.html)

# 1. What is the analogy and how can it be justified?

Let's begin with a game: Can you guess the cultural institution? It is one of the UK's Landmark Millennium projects, funded primarily through lottery income to help commemorate the start of the new millennium. As with similar projects, it is a piece of landmark architecture commissioned to anchor a wider urban-regeneration programme. As such it was a major investment in what had previously been considered a deprived area.

Since opening it has welcomed many visitors (significantly more than 500,000 per year). They come to engage with the work of skilled experts and artisans, either directly or mediated by highly-trained interpreters. There is a supporting education programme which enables school students to learn skills, use the tools and understand the background knowledge required to create new work as well as appreciate the work of professionals. From the institution's perspective however, most visitors are consumers rather than creators (although in practice the individual's experience is co-created by their interaction with the experience). The site houses a mixture of activities, some of which are driven by its public mission and others which are more commercial, but the institution was established fundamentally to create a public good. It promotes itself in part as a visitor attraction – as a “destination” as well as a venue – and encourages visitors to use its public spaces as well as its primary facilities.

This description could actually apply to a number of organisations. In this case I was particularly thinking about the Lowry Centre<sup>3</sup>, in Salford, which combines an art gallery housing works by LS Lowry and exhibitions of contemporary visual art with theatre and studio spaces for a variety of performing arts. However, the same description could have applied to other arts institutions such as Tate Modern or the Wales Millennium Centre, or to science centres such as Explore At-Bristol or the Centre for Life in Newcastle.

When the detail of the content (or medium, or art form) is taken away, the nature of the visitor (or consumer) experience at cultural venues is surprisingly similar, and is as applicable to science centres as to other types of organisation. At the heart of many (if not most) cultural institutions is an experience shared with the public that enables them to engage with and appreciate products of the skills and knowledge of others. Moreover these cultural products can have an array of effects on the audience/participant, from the personal (increased self-confidence, enjoyment), the intellectual (increased knowledge, more informed decision-making) to the communal (sense of community identity, social and physical regeneration). Science centres do not seem, as a sector, to be very good at articulating the full range of their impacts, let alone ascribe value to them. Why is this?

## Learning

Science Centres have not traditionally thought of themselves as part of the cultural sector. This is in part due to the individuals who founded many of the early centres, who were often eminent scientists<sup>4 5</sup>. For them, science centres were created to form an informal branch of science

---

<sup>3</sup> See “About the Lowry”: <http://www.thelowry.com/aboutthelowry/default.html>

<sup>4</sup> e.g. Professor Richard Gregory, Bristol Exploratory; Professor John Beetlestone, Techniquist; Francis Evans, SCOPE, Sheffield

education, to contribute to the “Public Understanding of Science” as was the common terminology in the 1980s and 1990s. Yes, science centres were fun and entertaining, but the underlying purpose was to foster a particular sort of learning.

There has been a great deal of research into the sorts of learning that can take place within science centres, and attempts to capture the “impact” that science centres have<sup>6</sup>. The problem that is encountered is that most visitors to science centres have a relatively short encounter with the institution. School groups typically have 1-2 hours in a science centre, while family visits are at the most a single day. Compared to the time children spend in school, or the cumulative number of hours spent online or watching television a science centre visit is very short, so isolating the impact of that visit from the impact of any other stimulus is incredibly difficult. Indeed, given the practical and resource requirements for a true impact study (complete with a control sample), combined with the lack of unanimity on definitions of “long-term” and “impact”, at least one commentator<sup>7</sup> has suggested that science centres should be more careful about what they claim to achieve lest someone should ask them to prove the unprovable.

It was from this context that I joined the Clore Leadership Programme as a Fellow in 2007, joining 28 of my peers from the world of arts and culture. The 2007/8 is a particularly mixed group, including theatre directors, dancers, museum curators, archivists, musicians, administrators and policy makers, community arts managers and a science centre manager. Through the programme we meet many influential leaders from the arts, and become fully immersed in the culture and politics of these creative organisations. All the way through the programme there were many familiar stories and situations until it dawned on me that the institutions being discussed, whether they were art galleries or opera houses, were really not very different from a science centre. Spending an extended period on secondment at the Edinburgh International Festival in 2008 also highlighted some organisational similarities with my own science centre.

### **“Arts-like”**

While describing science centres as arts organisations may be too strong, I would argue that they can certainly be described as “arts-like”. Beyond the descriptions above, they are institutions offering the public a range of experiences that they are free to choose or decline. Their work is “consumed” in similar ways to other cultural forms. They make use of media that other arts bodies make use of, from the full range of exhibition techniques to live performance, and increasingly engage with artists to create new hybrid work. It could be argued that the interactive exhibits in a science centre lie towards one end of a spectrum, with visual arts installations towards the other such that interactive media installations by artists such as Darrell Viner (with works commissioned by the Science Museum and Thinktank in Birmingham as well as traditional visual arts venues) lie in the middle zone, works that offer some scientific commentary or interpretation. Live performance is less well developed, with science centres only just expanding beyond the traditional “lecture-demonstration” model pioneered by the Royal Institution with eminent figures such as Humphrey Davy and Michael Faraday. New models are emerging that explore the spaces occupied by other art forms, with notable productions including “*Visualise*”, by Science Made Simple (a choreographed science show without spoken language), “*Darwin and the Dodo*”, by Desperate Men (a street theatre performance around Darwin and the theory of Evolution), not to mention the use of

---

<sup>5</sup> See Gregory “Turning minds on to science by hands-on exploration: the nature and potential of the hands-on medium”

<sup>6</sup> E.g. “Inspiration, Engagement and Learning: The Value of Science & Discovery Centres in the UK. Working towards a Benchmarking Framework”, 2007, Eccsite-UK

<sup>7</sup> “Evolving Science Communication” symposium, Bristol, 2009 ([scu.uwe.ac.uk/index.php?q=node/182](http://scu.uwe.ac.uk/index.php?q=node/182)), debate session involving the author and other participants under “Chatham House” rules.

stand-up comedy, traditional storytelling and puppet theatre within a number of recent science centre programmes.

If science centres are “arts-like”, who are the artists and what is the art form? This is where the analogy becomes stretched, but the answer to the first part of the question depends on the answer chosen for the second. If the art form is “science” then scientists would be the “artists”. However, this linguistically convenient analogy doesn’t really work, as most scientists’ work does not entail the production of material for direct public consumption, even though they are the primary source of intellectual capital in this field. If instead you select “science communication”, i.e. the processing, interpretation and presentation of raw science for audiences, as the art form then there is an array of roles under the banner of “science communication” that could be considered the artists. The skills include writing, performing, design, manufacture (of exhibit installations) and, increasingly, digital media production. Skills that a great many acknowledged artists utilise.

But are science communicators really artists? The question of what an artist is has been debated since time immemorial, and will no doubt continue to be analysed. In debates of this nature under the banner of the Clore Leadership Programme, an interesting dichotomy has emerged that underlies many of the other tensions in debates about the arts. One view of artists is that they are exceptional people who should be supported for their value to society while others see art as an act available to all, (though some execute it to much greater effect than most). This tension between art as something one does and something that one is can be witnessed among science communicators. As a field it contains many people who see it as a life vocation, something that they are compelled to do. That being said, the same sense of vocation and self-identity can be observed in other careers with a public service element, from teaching to the health professions, so this alone cannot justify the analogy.

While still debateable, reframing science centres as “arts-like” enables us to ask some new questions about them as institutions and the way their work is viewed and valued. The following sections review some of the relevant cultural studies research and arts world debate that could be relevant to science centres, the gaps in this analogy and the relationship between the arts and the public. I conclude with an exploration of what science centres can learn from the collective research effort that has been carried out in the arts, and propose some suggestions of how this could be applied to help science centres move forward.

## 2. How do arts organisations validate and assess their work?

Irrespective of the particular form, it is widely believed that the arts “enrich people’s lives”<sup>8</sup>. Unfortunately, this statement is rarely sufficient to justify funding, particularly from the public purse, so a great deal of time and effort has been spent over the decades to try and capture in more formal terms what it is that the arts do and why they should receive money to continue. In the immediate post-war years the Council for the Encouragement for Music and the Arts (which later became the Arts Council of Great Britain) set out to define a “canon” of great work which could be promoted to the nation like a form of cultural rationing. A highly educated intellectual elite selected work that was considered important for the nation, and established the principle that “professional” art is superior to amateur work. The first chairman of CEMA was the influential economist John Maynard Keynes who recognised the benefits that the public gained from the arts in and of themselves. Attempts at quantifying this value have been undertaken ever since.

Among Keynes’ successes was to establish the principle that the arts (or a subset, at least) were deserving of state support, securing the future of forms of culture that in all likelihood would have failed to gain sufficient commercial income to survive. Forms such as opera and ballet spring to mind. However, with public money comes public (and political) scrutiny. The “elite” arts initially declined to offer any practical benefits, almost defining themselves through an absence of utility. Over time though the pressure to offer more justification for public subsidy has grown, particularly through years of tight and falling funding during the 1970s and 1980s, prompting claims about the additional benefits that occur as a result of cultural activity.

### Instrumentalism

Initially innocuous, these secondary benefits range from the economic impact of cultural activity to improvements in the health and wellbeing of participants and audiences. While few questioned whether these effects are real, as attempts to measure and quantify them increased there was an emerging fear among cultural researchers and practitioners that their importance was outgrowing their significance. Thus was born the “intrinsic versus instrumental” debate, which was framed as a confrontation between what some would characterise as the inherent value of a cultural experience and the personal effects on the viewer against secondary “by-products” of the experience that coincide with an external political agenda. While these are exaggerated definitions of both intrinsic and instrumental effects, they put the subsequent debate into context.

During the recession of the 1980s, the arts were beginning to be seen as a vehicle for urban and economic regeneration. Jobs in the arts were seen as relatively low cost to create, and the Arts Council began to refer to the arts as an “industry” which received public “investment”, pointing to benefits in relation to jobs, tourism and community-building at a time when many UK cities were seeing the decline of their traditional industries. A 1988 report, “The Economic Importance of the Arts in Britain”<sup>9</sup> presented the contribution of the cultural industries to the UK economy, influencing the policies of many local authorities into the 1990s.

---

<sup>8</sup> McCarthy, Kevin F., Ondaatje, Elizabeth H., Zakaras, Laura, & Brooks, Arthur, “Gifts of the Muse: Reframing the Debate About the Benefits of the Arts”, 2004

<sup>9</sup> Myerscough, J, The Economic Importance of the Arts in Great Britain, Policy Studies Institute, London, 1998

In 1992 the Conservative Government created the Department of National Heritage, the first time that arts and culture had been represented at Cabinet level through a Department of State<sup>10</sup>. This was a reflection of increasing political interest in the cultural sector and a desire to extend principles of accountability and strategic management from other areas of government. The Department (and its successor from 1997, the Department for Culture, Media and Sport) spent most of its money through intermediaries such as the Arts Council so its own performance against its strategic aims and objectives was dependent upon the information gathered through these intermediaries. Thus, the DNH sought to improve the management and accountability of the bodies it sponsored, introducing funding agreements that specified the expectations being made in return for funding and performance indicators relating to its policy interests, including access income generation and financial management. These developments required the ongoing collection of data.

The DNH agendas included increasing access to funded arts, heritage and sport, which necessitated research into the background of participants and non-participants. A by-product of this was to broaden out the range of organisations receiving public funding from the historical recipients that Keynes would have recognised to more community-level activities.

The election of the Labour Government in 1997 brought further political interest in arts and culture. As well as renaming the department (from DNH to DCMS), the new administration had a much greater interest in the role of culture in advancing a wider range of government objectives. In the first DCMS annual report in 1998 the department's four guiding themes were set out: "the promotion of access, for the many not just the few; the pursuit of excellence and innovation; the nurturing of educational opportunity and the fostering of the creative industries"<sup>11</sup>. Funding originating at the DCMS has been accompanied by expectations of outcomes compatible with these themes.

The Arts Council and others have responded to these pressures by commissioning and aggregating research in support of the instrumental case. While there has been criticism about the quality of some of this work<sup>12</sup> in particular the relative lack of independent quantitative data, there is now a substantial body of material arguing a range of impacts. In 2004, the Arts Council published a summary<sup>13</sup> which listed studies measuring impacts of the arts on employment, education, health and criminal justice as well as the application of the arts to regeneration. While the plural of anecdote is not evidence, and the questions being asked may not be answerable in a scientifically valid way, the generally positive reaction of policy makers has led to note the emergence of a "new orthodoxy" that arts and culture are socially useful. Some advocates, such as Alec Coles (Director of Tyne & Wear Archives & Museums) would go further, arguing that the social benefits are a primary purpose of cultural institutions such as museums.

However there has been criticism of the "new orthodoxy" by many producers of cultural goods who conversely believe it fundamentally misses the point of what the arts are for, which is not primarily health, education or economic regeneration. Visual artists in particular have been frustrated by pressure to assess their work on secondary effects, with the Turner-Prize winning ceramicist Grayson Perry creating a piece in 2007 entitled "*This pot will reduce crime by 29%*" as a protest<sup>14</sup>. The think tank Civitas, in a blog post<sup>15</sup> entitled "The Philistines are upon us" protest at the vulgarity of a report<sup>16</sup> by (competing) think tank Demos which criticised the economic impacts and business ability

---

<sup>10</sup> Detailed in Selwood, Sara, "Measuring Culture", December 2002

<sup>11</sup> DCMS Annual Report 1998 "The Government's Expenditure Plans 1998-1999", The Stationery Office

<sup>12</sup> Selwood, Sara (2002) "The Politics of Data Collection: gathering, analysing and using data about the subsidised cultural sector in England"

<sup>13</sup> "The impact of the arts: some research evidence", May 2004

<sup>14</sup> See <http://www.flickr.com/photos/marcwathieu/sets/72157606491271773/>

<sup>15</sup> See [http://www.civitas.org.uk/blog/2007/07/the\\_philistines\\_are\\_upon\\_us.html](http://www.civitas.org.uk/blog/2007/07/the_philistines_are_upon_us.html)

<sup>16</sup> See <http://www.demos.co.uk/publications/publiclyfundedcultureandthecreativeindustries>

of the arts. Sara Selwood expressed concern that the emphasis on gathering evidence was “*closely associated with an extension of government control over the sector, and the tendency to value culture for its ‘impact’ rather than its intrinsic value*”<sup>17</sup>.

## **Intrinsic values**

So if these are secondary effects, what are the primary effects of artistic activity? The short responses typically return to the “enriching people’s lives”<sup>18</sup> argument or Sir Brian McMaster’s description of culture, which “*can help us make sense of our place in the world, ask questions we would not otherwise have asked, understand the answers in ways we couldn’t otherwise have understood and appreciate things we have never before experienced*”<sup>19</sup>. The problem is that these are also describing instrumental effects, albeit on the individual rather than on society at large. The intrinsic value of an artistic product must surely be an answer to a deceptively simple question: “is this any good and, if so, why?”

The purest form of analysis of this question is the field of aesthetics, the philosophical consideration (and criticism) of culture in terms of beauty and taste. Subjective criticism is experienced across most art forms, with the role of the critic considered an important (if not essential) part of the cultural ecosystem. Critics of literature, theatre, dance, music and the visual arts develop an expertise through experiencing a massive body of work (more than most audiences or practitioners). The judgements they make can be called into question: there are at least two different models at play in most aesthetic criticism. Philosophers<sup>20</sup> have described the “prescriptive model” as seeking to apply pre-existing rules or values to new work resulting in prescriptive judgements of quality. Whether these proclamations are aimed at the masses or at a bourgeois intellectual elite is almost irrelevant – the critic’s word is final (rather like the authors of the “canon”). A contrasting model, the “appreciative model”, would recognise that the human experience of the work is paramount, irrespective of any knowledge of the “rules”. In this paradigm the value of a work of art can be appreciated by an observer without them necessarily being able to fully articulate why.<sup>21</sup>

The prescriptive model describes a world that would culture into “elite” and “populist” activities, suitable for their respective (non-overlapping) audiences. Some research into the composition of audiences<sup>22</sup> as well as the prevailing culture of accessibility might suggest that the appreciative model is more suited to the modern world. What the study of aesthetics flags up is the role of judgement alongside or (according to some commentators) instead of measurement. Even studies where intrinsic effects are measured and quantified<sup>23</sup> the data is constructed from indices of scores based on the value judgements of individual audience members.

Moving from philosophy into sociology, Anthony Giddens has described how “*social structures are both constituted by human agency, and yet at the same time are the very medium of this constitution*”. When applied to cultural activities, this duality of structure would imply that the degree of cultural capital gained from the work for any individual will depend on a combination of both their immediate response and experience and by their social inheritance (upbringing, education,

---

<sup>17</sup> Selwood, Sara (2002) “The Politics of Data Collection: gathering, analysing and using data about the subsidised cultural sector in England”

<sup>18</sup> McCarthy, Kevin F., Ondaatje, Elizabeth H., Zakaras, Laura, & Brooks, Arthur, “Gifts of the Muse: Reframing the Debate About the Benefits of the Arts”, 2004

<sup>19</sup> McMaster, Brian, “Supporting Excellence in the Arts: From Measurement to Judgement”, January 2008

<sup>20</sup> Hamilton, Andy, “The Art of Criticism: Vindicating an Aesthetic Conception Against Elitism and Populism”, July 2009

<sup>21</sup> Hamilton, Andy (see previous ref)

<sup>22</sup> E.g. Chan, Tak Wing, & Goldthorpe, John H.

<sup>23</sup> Brown, Alan S., & Novak, Jennifer L., “Assessing the Intrinsic Impacts of a Liver Performance”

cultural context). So even if you do not accept that a dominant elite have an established predetermined model against which all art is judged, Giddens's theory of structuration implies that every visitor or audience member carries their own rules with them when they evaluate a cultural experience for themselves<sup>24</sup>. The extent to which an individual has experienced culture throughout their lives, equipping them with both the tools to engage with new experiences and a body of memories against which to compare the new, will shape the impact that any new cultural work can have.

## Excellence

Making judgements was the pretext for the landmark report published in 2008. In "Supporting Excellence in the Arts"<sup>25</sup>, Sir Brian McMaster explored the potential to move "from Measurement to Judgement" in order to encourage, support and maintain "excellence". The report formed the start of a debate rather than a conclusion as it contained relatively few practical solutions (and those it did contain were not necessarily realistic, such as 10-year funding agreements for "excellent" institutions). The debate has taken place among policy makers, funding bodies, artists and cultural studies researchers. Some of the most passionate discussion has been around one of McMaster's key themes, the question of who can make artistic judgements. McMaster's suggestion is that artists themselves should play the key role, participating in peer-reviews of each other's work and being represented on bodies that award funds. Dissenting views include the fear that this could be taken as an opportunity to retreat from the trend of widening access into a new elitism. While there is no evidence to date that this is taking place, it reflects a larger omission in the report. Many commentators<sup>26</sup> have noted that the voice of the public, both the consumers and the paymasters of subsidised culture, is absent in the proposed methodologies for judging excellence. Given that McMaster's ultimate definition of excellence in the arts ("*life-changing experience*") is based on the user experience rather than the creative input this would seem to be a valid criticism, although the producer perspective often has less representation in academic analysis. Balancing the views of producers and audiences is a significant challenge. In particular the question of how to assess and/or understand the "public", a diverse spectrum of people, without allowing special-interest groups to hijack the process and distort the public voice remains unanswered.

The practical consequences of the report will be on the development of processes by the bodies sponsored by DCMS who distribute funds. The Museums, Libraries and Archives Council (MLA) have carried out a pilot peer-review process, recruiting ad hoc panels of reviewers to visit each institution and report back on their findings. The pilot museums were the Natural History Museum, the National Portrait Gallery and Tyne & Wear Archives and Museums<sup>27</sup>. The institutions worked with the MLA and DCMS to develop the framework and protocols for the pilot and were given a right to reply once the reviewers submitted their reports. The review panels consisted of representatives of national and international peer institutions plus a member who could provide local context (e.g. a local businessperson). While the pilot institutions found positive elements from the process, there were some unavoidable weaknesses. Museum visitors had no official voice in the process, and the snapshot of an institution seen in a 3-day visit, supported by documentation, is bound to present an incomplete picture (especially in the case of a multi-site service like TWAM). It is unclear at the time of writing how the MLA plan to take this process forward, but it would not be unreasonable to assume that the growing familiarity of an ongoing, universal scheme such as this would improve the process.

---

<sup>24</sup> "Anthony Giddens: critical assessments", ed Christopher G.A. Bryant and David Jary, London, Routledge 1997

<sup>25</sup> McMaster, Brian, "Supporting Excellence in the Arts: From Measurement to Judgement", January 2008, DCMS

<sup>26</sup> E.g. Holden, John, "Democratic Culture: Opening up the arts to everyone"

<sup>27</sup> See [http://www.culture.gov.uk/reference\\_library/publications/5934.aspx](http://www.culture.gov.uk/reference_library/publications/5934.aspx)

The Arts Council faces a much harder challenge as it supports such a broad range of art forms. Prior to the publication of the McMaster review, the Arts Council published a summary<sup>28</sup> setting out how their approach to making assessments of artistic quality within their decision-making processes for both regularly-funded organisations and their Grants for the Arts funding scheme. This approach was quite rounded, taking into account three dimensions of quality: the quality of the idea behind the work, the effectiveness of how that idea is put into practice and the contribution the work makes to the artist's own development, the development of the particular art form and on the wider development of the arts. All three dimensions are broad and, in the main, subjective. As such there are multiple means of assessment employed, combining self-assessment by the artist, assessment by their professional peers plus in some cases the Arts Council commissions independent "arts reporters" to provide a critical assessment based on their own experience of the work. While this approach seems remarkably similar to McMaster's calls for judgement over measurement, there are other factors that are taken into account for funding decisions including the artist's (or their institution's) capacity to deliver, their financial viability and an assessment of the public benefit to be gained from funding the work (the last of which could be interpreted as the extent to which secondary policy objectives may be met). At the time of writing (summer 2009) this approach to assessment is still active, despite having been published 15 months ahead of the McMaster review. It may well be that the ultimate response from the Arts Council will be an update to this process rather than anything more dramatic.

There have been some more concrete responses to McMaster in the form of specific projects. One of the areas addressed was cultural education – the idea that by engaging with young children it is possible to make culture a familiar experience, thus providing a framework for understanding cultural experiences in the future. This "normalisation" of arts and culture was also incorporated in the government's "Children's Plan"<sup>29</sup> which stated an ambition for every child to have the opportunity to engage in 5 hours of cultural activity per week. In 2008 this proposal was refined in the invitation for proposals to run pilots of a new scheme, entitled "Find Your Talent"<sup>30</sup>, under which children and young people (up to the age of 19) would be "entitled" to 5 hours of "high quality cultural experience", to be provided both inside and outside of school. This echoed McMaster's recommendation that cultural organisations "*be proactive in meeting the extra demand for their work that the "cultural offer" will generate*" further calling for this new activity to be "*of the highest standard*". The administration of the pilot programmes, which began in late 2008, and potentially a national scheme from late 2011, was given to a newly-created body "Creativity, Culture and Education"<sup>31</sup>. CCE is funded via the Arts Council, from which it has also inherited the coordination of the Shine Festival (a national young people's festival) and the Creative Partnerships programme (a network of regional bodies linking schools with artists and creative practitioners). It is hoped that this package of activity will lead to a greater demand for excellence cultural experience in the future, although Government (via DCMS) has an interest in young people feeding into the creative industries.

While some artists and commentators have lamented the instrumentalisation of arts and culture<sup>32</sup>, and McMaster and others have sought to remember the intrinsic value, the reality is that there should be no conflict. Arguing that culture is somehow above measurement when other areas of public spending (e.g. health or education) also have benefits beyond their immediate economic value is unlikely to get a sympathetic hearing. More constructive is the recognition, by many practitioners and academics, that the arts have a broad range of impacts, on individuals, on communities and on

---

<sup>28</sup> "How we assess artistic quality", October 2006, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))

<sup>29</sup> Department for Children, Schools and Families, "The Children's Plan - Building Brighter Futures", December 2007 (The Stationery Office)

<sup>30</sup> See <http://www.findyourtalent.org/>

<sup>31</sup> See <http://www.creativitycultureeducation.org/>

<sup>32</sup> E.g. Newman, Andrew, & Selwood, Sara (2008) "Editorial", *Cultural Trends*, 17:4

society at large, and while some of these effects may be measurable others will not be. Being selective about which effects are important, in any direction, ultimately leads to an incomplete understanding of why culture exists and is important.

## Holistic views

This is the dominant position in academic cultural studies, where a great deal of work is taking place to explore ways of formalising a holistic view of cultural activity. In 2004 McCarthy et al published an extensive research review<sup>33</sup> looking at the benefits of the arts in a rounded way. They looked at studies reporting both intrinsic and instrumental effects as well as reviewing the literature on participation in the arts (the majority of this research being US-based). They reframed the findings in terms of a matrix which had a spectrum running from private (internal) benefits to public (communal) benefits as one dimension, and a scale with purely intrinsic and purely instrumental at the poles of the other dimension. All the different categories of benefit can be located within this matrix. The findings of the literature review were very telling. The research-base describing instrumental benefits was quite weak, with problems ranging from a failure to do any more than demonstrate correlations (no causality or mechanisms for benefits), to failing to recognise that many of the claimed benefits can be achieved through other means (whose relative effectiveness should be compared). Another issue they found was that there was no agreed language for discussing intrinsic benefits, either the individual or the communal, making it difficult for policy makers to recognise their importance. The most optimistic findings came from the assessment of participation, in which the importance of early exposure to the arts was clearly identified as a predictor of future participation (in an empirical confirmation of Giddens). Childhood experiences have the potential to act as “gateway experiences” that provide the initial acquaintance with the arts. This “cultivation of demand” was identified by the book’s authors as an important factor in delivering their main recommendation that cultural policies should aim to maximise the spread of the benefits of the arts by focussing on demand rather than on supply.

John Holden, of City University and the think tank Demos, has been an active contributor to this debate. In the 2004 publication “Capturing Cultural Value”<sup>34</sup> he set out the flaws in the instrumental-intrinsic debate, along with the difficulties in capturing either accurately. In this he was mirroring the work of McCarthy et al across the Atlantic. His proposal was to seek a solution built upon a new language surrounding the problem, particularly when considering intrinsic value, “*that avoids the taint of either patrician judgement or mystification*” while not simply focussing on the easy to measure. By borrowing language and concepts from a number of fields, notably anthropology (the concept of non-economic values and the language to describe them), environmentalism (understanding of concepts like stewardship, equity, diversity and resilience), accountancy (accounting for intangibles – things that are difficult to measure) and the emerging political ideas around Public Value. The synthesis of these ideas, termed “Cultural Value” offer an alternative view of artistic activity. It moves assessment from measures of performance against preset targets (which are often based on things that are easy to measure) to thinking about all the different sorts of value that are created by cultural activity.

While this may ultimately mean that similar measures are included in the new process, the objectives underlying the measurement change. The model begins with institutions establishing their own values and setting their own objectives, based on their own context, with an increased trust in professional expertise between institutions and funders. What might have previously been

---

<sup>33</sup> McCarthy, Kevin F., Ondaatje, Elizabeth H., Zakaras, Laura, & Brooks, Arthur, “Gifts of the Muse: Reframing the Debate About the Benefits of the Arts”, 2004, Rand Corporation

<sup>34</sup> Holden, John, “Capturing Cultural Value: How culture has become a tool of government policy”, December 2004, Demos

(instrumental) strategic goals become routes to the creation of “public goods” (for example, “regeneration” is not a goal, but one route to achieving prosperity and healthier communities). The weakness of this approach is that the customised objectives become difficult to generalise, so what may be more useful for individual institutions or practitioners may ultimately have very little value from a strategic policy making perspective. Cultural Value also recognises that the working practices of cultural organisations create (or destroy) value, so these must form part of any assessment. Systems and processes that are not aligned to the broad themes of value chosen by the institution are unlikely to create value. And given that the experience of value is subjective, capturing Cultural Value must be based on public perceptions of their experience.

Some of these ideas were taken further in 2008 in “Democratic Culture”<sup>35</sup> which argues the case for a mature, democratic cultural sector in which mutual respect between public and professionals leads to culture that is owned by all. It is, in a sense, the logical extension of McMaster’s concept of the public’s entitlement to excellence. It requires a public that is engaged with arts and culture (and vice versa), having been entitled to cultural education from an early age. The concept plugs the gap in the McMaster review where public voices arguably should have been (alongside professional peers).

## **Cultural Economics**

Such calls to action, however eloquent and well researched, don’t directly offer practical methodologies for cultural practitioners (and funders) to implement. Looking to the world of economics, Bakhshi, Freeman and Hitchen<sup>36</sup> point to the tools used in other fields to assess value that cannot be directly measured. By assessing the judgements of users (and, in some cases, non-users’) of the equivalent value of intrinsic effects, in the context of a mass study, it is possible to produce proxy economic measures. This economics of trust and value has a wide range of applications, and the authors seek to demonstrate how techniques from mainstream economics could be applied to the cultural world. The variations on this methodology (including “Contingent Value” or “Willingness to Pay”) have been applied in a number of situations, including the arts, with some major case studies to support the claim of relevance and credibility (although the subjectivity is still cause for criticism).

As long ago as 1984 the Australia Council (broadly equivalent to the Arts Council) commissioned a study<sup>37</sup> which analysed the levels of interest, consumption and participation in the arts of the adult population of Australia. Among the findings was the appreciation of the arts among those who did not participate (e.g. non visitors who are nonetheless pleased that their town has a museum), people’s appreciation of benefits to their descendants and their appreciation of choice – or “existence”, “bequest” and “option” benefits to use the economics terminology. When the willingness to pay (WTP) for these benefits was assessed (both in terms of redirecting public funds from other activities, and in terms of direct taxation on individuals) the researchers found a WTP of more than double the actual public subsidy per head at the time.

Economists apply these techniques elsewhere, with one of the severest tests being the use of Contingent Valuation to assess the environmental damage caused by the oil spill from the Exxon Valdez tanker of the coast of Alaska in 1989. The valuation of the damage, including lost existence, option and bequest benefits as well as directly measurable losses such as fishing and

---

<sup>35</sup> Holden, John, “Democratic Culture: Opening up the arts to everyone”, 2008, Demos

<sup>36</sup> Bakhshi, Hasan, Freeman, Alan, & Hitchen, Graham, “Measuring Intrinsic Value: How to stop worrying and love economics”, April 2009, Missions Models Money

<sup>37</sup> Throsby, David, & Withers, Glenn, “What Price Culture?”, 1984, published for the Policy and Planning Division of the Australia Council

tourism income, served as the basis for the large scale fines and compensation payments levied. This technique was validated by an expert panel on behalf of the National Oceanic and Atmospheric Administration in 2001<sup>38</sup>.

## **Strategic Return on Investment**

Despite its status within economics, it can be argued that Contingent Valuation and the related methodologies within cultural economics are still dependent on subjective value judgements, and that this ultimately is a weakness. Funders and policy makers are duty-bound to find the best evidence to underpin their decisions, which means seeking the most robust methodologies for establishing value. The Office of the Third Sector (part of the Cabinet Office of the UK government) has, along with nef (the New Economics Foundation), the National Council for Voluntary Organisations (NCVO) and others have introduced a more complex process called “Social Return on Investment” to the UK, which is an attempt to more accurately quantify the benefits resulting from a specific investment in a public good. The origins of SROI are in the US, where it was built from Return on Investment (ROI) studies carried out on State Library services. It is being used in local government to assess some services by the Department for Health’s Social Enterprise Investment Fund. In the arts world, the main application of SROI to date has been to assess the impacts of arts and employment projects.

The Museums Libraries and Archives Council (MLA) and the new economics foundation published a discussion paper in May 2009<sup>39</sup> to explain SROI and to assess its application to museums (and, by implication, the cultural sector more widely). It sets out the six stages of an SROI assessment:

1. *Establishing scope and identifying key stakeholders* (from people directly affected, such as participants, visitors etc to broader groups whose agendas may be affected)
2. *Mapping Outcomes* (focus group research with each stakeholder group to explore impacts, create impact map and identify likely indicators for these impacts)
3. *Evidencing Outcomes* (identify a financial proxy for the value of each impact for particular stakeholders and develop questionnaire & sampling framework for collecting outcomes data)
4. *Establishing Impact* (collect data to establish outcomes that would have happened in any case (“deadweight”), what other contributory factors might be at play for each outcome (“attribution”) and what potential negative effects there might be (“displacement”)).
5. *Calculating SROI* (calculations – adding benefits, subtracting negatives, comparing result to initial investment to create a ratio – plus testing sensitivity of results by changing assumptions and seeing effect on final ratio)
6. *Reporting, using and embedding* (sharing findings with stakeholders, responding, establishing systems to continue collecting outcomes data to observe trends)

The discussion document contains a number of criticism of the approach, ranging from meaning (if the end result is a single number, what does this actually mean?) to methodological concerns. Of the latter, possibly the most serious concern is that, despite appearances, the process can still depend on value judgements. In particular the processes contained with stage 3, where monetary values are applied to types of outcomes, is vulnerable to attack. Even in cases where there is a quantifiable outcome (the MLA/nef document suggests “improved self-confidence” as an outcome from a mental-health support programme, for which the indicator might be “number of hours per week spent socialising”) turning that quantity into money may still be arbitrary (the value of “time

---

<sup>38</sup> Arrow, K., Solow, R., Portney, P.R., Leamer, E.E., Radner, R. & Schuman, H., “Report of the NOAA Panel on Contingent Valuation”, May 2001

<sup>39</sup> “Proving Value and Improving Practice: A discussion about Social Return on Investment (SROI)”, May 2009, Museums Libraries and Archives Council and nef consulting

spent socialising” could be calculated in terms of hourly pay rates or on an estimate of “value” to the individual). As such it may at times be seen as a more complex analysis of Contingent Valuation although most applications to date have been sufficiently complex to require many different methodologies for valuing the different outcomes (for multiple stakeholders).

And therein lays the problem with much of the work into assessing impacts, both instrumental and intrinsic. To even begin to capture a realistic, statistically valid, picture of the benefit of an artistic or cultural activity requires an enormous volume of work – establishing a framework, data gathering, analysis and interpretation. The publicly-funded cultural sector has developed a culture of data collection over time, out of necessity (and obligation), but even this is insufficient to be applied to every artwork and cultural programme in the UK. Many of the discussion documents mentioned above, as part of their endorsement of particular methodologies, call for additional resources or organisations as part of the process. MLA and nef refer to the need for a network of “social auditors” to “*provide the necessary support and assurance process*” to maintain the integrity of the SROI process<sup>40</sup>. Bakhshi, Freeman and Hitchen call for a DCMS-based “*Centre for Excellence in Cultural Economics*”<sup>41</sup>. The DCMS/MLA Museum peer-review process would, if rolled out beyond the pilot, require many person-days of reviewer time plus central resources to coordinate and facilitate the process. As the world experiences an economic downturn, its effects on the arts in the UK compounded by the impending Olympic Games which are competing for shrinking resources, instigating expensive procedures that do not directly contribute to the primary outputs of arts and culture organisations may not seem wise. However, it may be in precisely such a climate that the arts will be truly valued by more people – there is certainly evidence that in times of recession people go to see more shows and films and read more books<sup>42</sup>, although their preferences become more conservative.

It is accepted by a great many people that there are positive impacts from the arts, but it may not be something that is practically demonstrable for more than a few exemplar cases. Cultural activities generate social capital through consumers exercising choice over how (and if) they participate and constructing their own meanings from the experience. Whether this control of the experience is the source of the benefits of the arts remains for discussion. As we shall see, issues of control are pertinent to the models of public engagement which science centres are now adopting.

---

<sup>40</sup> “Proving Value and Improving Practice: A discussion about Social Return on Investment (SROI)”, May 2009, Museums Libraries and Archives Council and nef consulting

<sup>41</sup> Bakhshi, Hasan, Freeman, Alan, & Hitchen, Graham, “Measuring Intrinsic Value: How to stop worrying and love economics”, April 2009, Missions Models Money

<sup>42</sup> Holden, John, “The Arts in a Recession”, *After the Crunch (update July 2009)*, Creative & Cultural Skills and the British Council

### 3. How do arts organisations differ structurally from science centres?

Let's take a step back from art forms and their effects on participants and consider the organisations on the producer side of the equation. While many art forms ultimately depend on the work (live performance or physical artefact) of individual artists, the public experience is often mediated by institutions that provide facilities, supporting infrastructure and administration. These organisations are typically structured to support the needs of the artistic programme. Comparing the structures of science centres with other cultural organisations gives us another test of whether they are genuinely "arts-like" or whether there are material differences.

#### Leadership

The origins of this research lie in discussions of leadership within an arts setting. There are often two distinct functions at the top of an arts organisation which can be fulfilled by taking different approaches. The management of the institution, within which we can include financial management, personnel and generally maintaining its long-term sustainability, all come under the heading of Executive Leadership. Artistic matters, such as creating the programme and identifying the artists who will deliver it, along with having the ultimate oversight of all editorial issues, come under the heading of Artistic Leadership. The relationship between these two aspects of leadership, whether they lie with one or more individuals, is critical to the health and wellbeing of the institution. While creative tensions can be productive, caustic tensions can slowly destroy an organisation through a creeping loss of morale and direction. There seem to be as many models for navigating this issue as there are institutions, but the following examples from the performing arts illustrate the diversity:

1. Edinburgh International Festival. The Chief Executive and Festival Director, Jonathan Mills, has overall responsibility for both the artistic programme and the organisation. The organisational management is delegated to the Managing Director, Joanna Baker, or as she put it "*Jonathan curates the festival and I curate the organisation*"<sup>43</sup>. In this model, the Artistic Leader is senior to the Executive Leader.
2. West Yorkshire Playhouse. The Playhouse is led by a double-headed, joint Chief Executive post. Within this shared leadership, Ian Brown is the Artistic Director of the theatre while Sheena Wrigley manages the machinery of the organisation. In this model, Executive and Artistic Leadership are equally shared.
3. Old Vic Theatre. Sally Greene is the Chief Executive of the Old Vic Theatre Trust, the body which took over the theatre from its previous owners. When the decision was made to return to being a production house a new Artistic Director, Kevin Spacey, was appointed. In this model the Artistic Leader reports to the Executive Leader.
4. Northern Stage. Erica Whyman is Chief Executive of Northern Stage, the largest producing theatre company in the North East of England. Her role encompasses the Artistic Leadership of the theatre company (including directing some of its landmark productions)

---

<sup>43</sup> Personal conversation during my 3 month Clore Secondment to the EIF.

but also the Executive Leadership of an organisation which operates a venue as well as a production house. In this model both roles are held by an individual.

The question for science centres is twofold: Does the artistic/executive leadership question arise? And, if so, do institutions recognise and respond to it?

I believe the question is relevant to science centres and can be boiled down to a very single issue. The intellectual content of a science centre, whether in the form of exhibitions, performances or special events, is deliberately chosen to reflect particular messages related to science. In a given centre, is there a single individual who has the final say over what these messages are, and do they have the authority to influence the programme in order to maintain a consistency of message? If such a person is present, they are the science centre's equivalent of an Artistic Director.

In the early days of the field in the UK, many of the founders of the first science centres would have fulfilled this role (and many more, including building the exhibits, writing labels and keeping the place clean). Pioneers such as Richard Gregory (Bristol Exploratory) or John Beetlestone (Techniquet, Cardiff)<sup>44</sup> were respected scientists who had a very clear concept of their intellectual mission. As the field has broadened there is more diversity within the sector, but individuals who are most easily identifiable as Artistic Directors seem to be less likely to be the senior figure. The Centre for Life in Newcastle has a Director of Science Communication (Ian Simmons) and Glasgow Science Centre has a Director of Science (Robin Hoyle), both reporting to their respective Chief Executives. Most of the Directors and Chief Executives on the committee of the Association for Science and Discovery Centres<sup>45</sup> (the UK's representative body for science centres) are primarily Executive rather than Artistic Leaders, although some (e.g. Phil Winfield, Director of INTECH, Winchester) have a combined role. With regular funding for science centres in short supply in the UK, and effectively non-existent in England, it is perhaps unsurprising that the Executive Leadership role tends to be the more senior post, but it may be that the science mission is more distributed across the organisations (or that the Artistic Leadership question has not yet arisen everywhere). It should also be noted that there have been cases where artist-led organisations have had financial or organisational problems as a direct result of weaker executive leadership<sup>46</sup>.

## Education

Where science centres appear most similar to other cultural institutions is in the provision of educational activities. For most science centres, education is at the heart of their mission<sup>47</sup>. The majority of the effort into establishing their impact<sup>48 49</sup> has focussed on educational impacts. In part this is because the subject matter is a core feature of the National Curriculum in all the UK nations, and because there is a body of research suggesting that there are weaknesses in formal science education for which a range of interventions (including science centres) have been developed.

---

<sup>44</sup> See Gregory, Richard L., "Turning minds on to science by hands-on exploration: the nature and potential of the hands-on medium", *Sharing Science: Issues in the development of Interactive Science and Technology Centres*, 1989, Nuffield Foundation

<sup>45</sup> See <http://www.sciencecentres.org.uk/about/committee.html>

<sup>46</sup> See <http://www.journallive.co.uk/culture-newcastle/arts-news/2008/08/14/the-man-from-mima-takes-over-at-baltic-61634-21529612/> for a report on the appointment of Godfrey Worsdale at Gateshead's Baltic Centre for Contemporary Art following a turbulent period of artistic leadership.

<sup>47</sup> See "The Impact of Science & Discovery Centres: A review of worldwide studies", Ecsite-UK, 2008

<sup>48</sup> "Assessing the impact of science centres in England", July 2009, Frontier Economics Ltd, London, for the Department for Business, Innovation & Skills

<sup>49</sup> "Inspiration, Engagement and Learning: The Value of Science & Discovery Centres in the UK" Ecsite-UK, 2007

Most science centre output is concerned with “learning” to some degree, especially since the increased adoption of the Museums, Libraries & Archive Council’s “Generic Learning Outcomes” model<sup>50</sup>. However the label “education”, with its supplier-side overtones, is more commonly associated with the programmes offered to schools, colleges and other organised groups. These programmes typically come in three guises: visits to the exhibition (often facilitated by science centre staff, and targeted to specific content); formal educational workshops (e.g. structured activities in a teaching laboratory); and schools outreach (where an element of the science centre experience, such as a science show performance) is delivered in a host school. All of this educational activity is content-led, and its impact is assessed on the basis of its contribution to pupils’ subsequent academic performance. (In fairness there are broader concerns taken into account in some situations, especially in activities exploring contentious topics, where engaging students in ethical debate is the primary objective).

This contrasts with education in the arts which does not necessarily begin with the same anchor in the school curriculum, but which has a great deal to offer schools and individual learners. Indeed, the Culture and Learning Consortium published a report in 2009 calling for a greater awareness and use of, as well as more support for, the concept of Cultural Learning<sup>51</sup>. In this context, Cultural Learning describes learning about culture (in the arts sense), learning using cultural resources and learning about cultures (in the social sense). It is a much broader concept of learning than the education offer within science centres, but the fact that such an influential group felt it necessary to publish a call for action from government, the education sector, the cultural sector and funders would suggest that it is not yet commonplace. As many arts organisations do not have origins in education (although this is not universally the case) the status of education within those institutions may be lower than other parts of the programme. In the research that fed into “Space for Learning”<sup>52</sup> the Clore Duffield Foundation found that the status of education in cultural institutions was often reflected in the size, location and condition of their learning spaces.

While all cultural organisations strive to provide learning opportunities, both formally and informally, it may be that science centres are more attuned to the current curriculum-based needs of schools but that the wider sector may be offering a window to a broader picture (albeit one that requires more work to deliver and to align with schools).

## **Public engagement**

Public Engagement with Science and Technology (PEST) is a cottage industry in the UK, to which science centres make a significant contribution. The modern field began with the publication of “The Public Understanding of Science”<sup>53</sup>, by Sir Walter Bodmer, which described how a lack of interest and knowledge was damaging to individuals and to the UK, and called for changes in government, education, industry and academic science in order to address this perceived deficit. This “deficit model” of science communication was the dominant approach for the subsequent few years, with many scientists believing that extending public knowledge was the key to gaining more support. During the 1990s a more complex appreciation of the relationship between science and the public

---

<sup>50</sup> See <http://www.inspiringlearningforall.gov.uk>

<sup>51</sup> Rogers, Rick, “Get It: The Power of Cultural Learning”, 2009, Culture and Learning Consortium. The Culture and Learning Consortium consists of representatives from Arts Council England, the Calouste Gulbenkian Foundation, the Clore Duffield Foundation, the Esmée Fairbairn Foundation, the Foyle Foundation, the Heritage Lottery Fund, Museums, Libraries and Archives Council, the Northern Rock Foundation and the Paul Hamlyn Foundation

<sup>52</sup> “Space for Learning: A Handbook for Education Spaces in Museums, Heritage Sites and Discovery Centres” (2004, [www.cloreduffield.org.uk](http://www.cloreduffield.org.uk))

<sup>53</sup> Bodmer, Walter, “The Public Understanding of Science”, 1985, Royal Society (London)

developed<sup>54</sup> which recognised that knowledge and acceptance are very different things. This new thinking gave rise to new sectoral acronyms including PAST (Public Awareness of Science & Technology - still top-down, but with fewer expectations) and PEST. Today terms like Science & Society are used to describe programmes that engage the public on more open terms, through activities like dialogue and co-enquiry (where experts and communities jointly create new knowledge).

The key concept in contemporary science engagement is that expertise lies in many places. While scientists bring special skills & knowledge to the table, there is “lay” knowledge that can benefit both parties. As a result engagement with the public impacts upon scientists as much as it changes the public. High quality public engagement is difficult and time-consuming so there a cadre of science communicators has emerged over time to facilitate the processes. While some scientists are capable of doing this themselves if they spend sufficient time to do a comprehensive job they effectively cease to be research scientists.

How does this compare with the picture in the arts? Some cultural commentators are addressing this question at the moment, with John Holden<sup>55</sup> and Tim Joss<sup>56</sup> both articulating the argument that artists and the public need a greater dialogue, and recognising that this will have impacts on all parties. Earlier I posed the question about who the artists are in science centres. We can reverse that question and ask who in the arts fulfils an equivalent role to a science communicator? Who facilitates the dialogue between artists and the public? Should it be the artists themselves, or is there a need for a body like the one which Tim Joss names COPEA (a Commission for Public Engagement with the Arts)? It is clear that there are some within arts who are thinking along very similar lines to PEST professionals (the next section discusses the Arts Council’s first foray into deliberative inquiry), but they have not yet taken their profession along with them. Indeed some of the discussions around this area, such as the section of the McMaster review on public engagement with the arts, are reminiscent of views on science communication from the Bodmer report era. Engaging with the public will not simply be a case of gathering more converts for the arts as they are today, but will lead to a process of change and growth for both the public and for artists (and arts organisations). This won’t necessarily lead to the end of some art forms (science centres still produce exhibitions) but the diversity of artistic and cultural experiences will expand over time.

## **Funding (and funding structures)**

Arts & Culture organisations come with a vast range of financial structures, running along a spectrum from full public funding to none, with many activities receiving some subsidy but earning additional income alongside. Many cultural activities involve a charge to participants, and many cultural institutions have additional income generating activities ranging from retail and catering to consultancy and conferencing. This mixed economy supports mainstream, mass-market culture alongside forms that could not survive in a free market (their costs would force prohibitive charges to the consumer). Thus the Royal Opera House and the British Museum can coexist with “Mamma Mia” and “Bodyworlds at the O2” in the same city.

Science centres (in England, at least) receive no regular public subsidy unless they are part of a larger body that does (such as a museum with a collection). Some receive occasional funding for specific service delivery (such as a regional STEMNET<sup>57</sup> contract or for operating a Science Learning

---

<sup>54</sup> See Durant, John, “A new agenda for the public understanding of science”, 1995, inaugural lecture at Imperial College

<sup>55</sup> Holden, John, “Democratic Culture: Opening up the arts to everyone”, 2008, Demos

<sup>56</sup> Joss, Tim, “New Flow: A better future for artists, citizens and the state”, 2008, Missions Models Money

<sup>57</sup> See <http://www.stemnet.org.uk/home.cfm>

Centre<sup>58</sup>, both DCSF initiatives) but otherwise they need to find their own means of covering their costs. This can be through admission charges, seeking grant-funding for projects or through their own commercial activity<sup>59</sup>. Only two of the centres established as Landmark Millennium projects, the Centre for Life in Newcastle upon Tyne and the Eden Project in St Austell, are able to fully cover their own operating costs solely through earned income (the former has a property portfolio which earns rental income, while the latter has become one of Cornwall's most-visited tourist attractions). Even in Scotland and Wales, where there is some financial support from the devolved administrations, science centres are not funded in the same way as other major cultural institutions.

While the differences in income sources is interesting, possibly the most significant impact is on the internal culture of the sector. Science centres have not historically had the same level of government attention that regularly funded arts organisations have had, with the result that there has been limited shaping of their agendas through monitoring in the way that instrumental targets were feared to be impacting on the arts. The positive consequence has been the relative lack of interference, but the negative aspect has been the lack of any consistency in the collection of data relating to impacts and audiences. This lack of sectoral evidence has hampered previous attempts to lobby for governmental support<sup>60</sup> and will continue until the sector agrees common methodologies in lieu of a top-down instruction.

### **Representation within government**

Representation for arts and culture is relatively clear, with the DCMS having primary interest and other departments sharing responsibility where activities overlap with their core objectives. For example the Department of Health share responsibility for Arts & Health schemes (whose funding often comes via NHS Primary Care Trusts) while the Department for Children, Schools and Families (DCSF) shares responsibility for children and young people's initiatives (e.g. Find Your Talent).

The 2008 House of Commons Science & Society Select Committee Inquiry into the funding of science and discovery centres identified that DIUS (now BIS) was the relevant department for dealing with science centres, although DCMS and DCSF also participated in the inquiry. DCMS oversaw the creation of the millennium centres through its management of the National Lottery (and the Good Causes, particularly the Millennium Commission) but have had no further financial interest in the sector. Their attention is focussed on museums, primarily through the MLA, and on their other directly funded agencies. DCSF are primarily focussed on schools and formal education, with their contribution to STEM (science, technology, engineering & maths) enhancement and enrichment made through their own STEMNET and SLC programmes. These are national schemes aimed at helping teachers to enhance their skills and practice. As independent local entities, science centres appear to be less interesting to government, who naturally want to see a national impact for their investments.

---

<sup>58</sup> See <http://www.sciencelearningcentres.org.uk/>

<sup>59</sup> "Assessing the impact of science centres in England", July 2009, Frontier Economics Ltd, London, for the Department for Business, Innovation & Skills

<sup>60</sup> "Assessing the impact of science centres in England", July 2009, Frontier Economics Ltd, London, for the Department for Business, Innovation & Skills

## 4. How do publics view arts organisations?

During 2006 and 2007 the Arts Council for England conducted a programme called “The Arts Debate”<sup>61</sup> which set out to learn about how people value the arts. It was conducted as a “public value inquiry”, a methodology popular in government under the Labour administration which implies a role for the public in relation to public sector organisations akin to the role of shareholders in the private sector. The programme had several stages, including structured public consultation events, an open consultation period for written submissions, and qualitative research with the arts community<sup>62</sup>. While the first of these, the public consultation, used deliberative techniques to allow participants time to hear and debate a variety of viewpoints before settling on their own opinions, the other two stages opened the project up to some criticism that there could have been undue influence from artists and arts administrators<sup>63</sup>.

The public consultation events, although limited in scope (approximately 170 participants in 20 discussion groups), demonstrated that people are able to engage in meaningful discussion about the arts, adopting multiple perspectives during the process. An initial assumption that the public would be primarily interested in their own experiences, with the discussion leading them to think more about the wider public benefit, the reverse was found to be the case with the report noting “*members of the public spontaneously focussed on social and community benefits*”<sup>64</sup>. The individuals were empowered by the deliberative process, but scale makes it difficult to argue that the findings are truly representative of the public. The value to the Arts Council has been to introduce new voices to their corporate planning and to trigger an internal debate on becoming more transparent in their decision-making. The public consultation revealed a general satisfaction with the level of public subsidy (presented as 39p per UK household per week, compared to £80 per household per week for the NHS<sup>65</sup>) but that more openness on how decisions are made about where the money goes (and what outcomes should be pursued) was needed.

This is not dissimilar to the Throsby & Withers findings<sup>66</sup> for the Australia Council in the 1980s that the public’s willingness to pay for the arts was not being over-estimated by the state (with the public consulted being willing to see arts funding doubled, even when aware of the tax implications).

### Taking Part

Since 2005 a DCMS commissioned project, in partnership with the Arts Council England, Sport England, English Heritage and the MLA, has been collecting information about adults’ engagement

---

<sup>61</sup> See Bunting, Catherine, “Public Value and the arts in England: Discussion and conclusions of the arts debate”, November 2007, Arts Council England

<sup>62</sup> Rumbold, Kate (2008) “The Arts Council England’s “Arts Debate””, *Cultural Trends*, 17:3

<sup>63</sup> Gray, Clive (2008) “Arts Council England and public value: a critical review”, *International Journal of Cultural Policy*, 14:2

<sup>64</sup> Rumbold, Kate (2008)

<sup>65</sup> Bunting, Catherine (2007)

<sup>66</sup> Throsby, David, & Withers, Glenn, “What Price Culture?”, 1984, published for the Policy and Planning Division of the Australia Council

in culture. “Taking Part”<sup>67</sup> is an ongoing survey to explore the rate and nature of participation, the motivations and barriers, and the demographic spread of participants. This is building up a massive data set from which interesting and useful information can be extracted for future policy making.

One example of the findings has been to uncover the influence of childhood involvement in the arts on adult engagement<sup>68</sup>. The Taking Part data revealed a number of factors, some of which may have been suspected but which may not previously have had any direct supporting evidence:

- being encouraged to get involved in the arts as a child increases the chances of being an active arts consumer as an adult
- the effect of childhood experience is very strong, nearing in magnitude the effect of education – the strongest predictor of arts engagement
- the level of parental encouragement differs by family background and personal demographics: parents of high social status are more likely to encourage their children to engage in the arts; girls and white children are more likely to receive encouragement than boys and children who are not white

This supports the case for government initiatives such as Find Your Talent and Creative Partnerships, which seek to distribute childhood cultural experiences more equitably. They also reinforce one of the findings of the McCarthy et al meta study of US research<sup>69</sup> which found that it was the initial contact with the arts (termed “gateway experiences”) delivering an individual’s first intrinsic motivations that encouraged ongoing participation. Furthermore, they also found that most adults who become involved in the arts had their initial exposure as children.

Another area where the Taking Part data is proving to be useful is in the study of the stratification of arts participation. Previous studies<sup>70 71</sup> had identified different patterns of consumption: “omnivores” who attend a diverse range of cultural activities (e.g. the film-buff who also enjoys opera), “univores” who are mainly interested in single type of art or culture and “inactives” who don’t tend to participate in any arts or culture. It was already known from these previous studies that these categories were not simply restatements of social stratification, although factors like education and status were closely related to patterns of consumption.

The Taking Part data allows for much more detailed analysis as it contains much greater sample sizes. It has confirmed the omnivore-univore distinction in different types of cultural consumption but has also demonstrated clearly a third class, “paucivores”, whose attendance at a range of cultural events is more likely than univores, but intermittently. It confirms that education, particularly possessing a university degree, is the strongest factor in predicting both the level and range of arts participation, with social status close behind. Income has a slight effect, but is much less significant, and after the impacts of these and other factors is accounted for, social class appears to have no effect on levels of attendance. Given that a core DCMS objective is to “increase the levels of engagement in the arts, culture and sport”, this data will be used to inform policy (and funding) decisions at a national level. Some responses might be quite simple – both this study and the Arts Debate suggested that there are low-level barriers to participation, like information about what to

---

<sup>67</sup> Bunting, Catherine, Godlieb, Jennifer, Jobson, Michelle, Keaney, Emily, Oskala, Anni, & Skelton, Adrienne, “Informing Change: Taking Part in the arts: survey findings from the first 12 months”, May 2007, Arts Council England

<sup>68</sup> Oskala, Anni, Keaney, Emily, Chan, Tak Wing, & Bunting, Catherine, “Encourage children today to build audiences for tomorrow: Evidence from the Taking Part survey on how childhood involvement in the arts affects arts engagement in adulthood”, March 2009, Arts Council England

<sup>69</sup> McCarthy, Kevin F., Ondaatje, Elizabeth H., Zakaras, Laura, & Brooks, Arthur, “Gifts of the Muse: Reframing the Debate About the Benefits of the Arts”, 2004, Rand Corporation

<sup>70</sup> Peterson, Richard A., “Problems in comparative research: The example of omnivorousness”, *Poetics* 33 (2005)

<sup>71</sup> Chan, Tak Wing, & Goldthorpe, John H., “Social Stratification and cultural consumption: The visual arts in England”, *Poetics* 35 (2007)

expect from an experience (the lack of which creates an “air of exclusivity”), while others may also be practical (access, cost, venue choices). What is significant in the context of this document is that this work has been commissioned from central government, with analysis from academics and funding agencies, rather than from the practitioners and arts institutions themselves.

## Changing times

The final thought on public participation comes from a consideration of the effects of a recession. In the July 2009 update to the publication “After the Crunch” John Holden<sup>72</sup> explored a number of scenarios for how the arts might respond to a post-recessionary environment. Among these was the “arts as consolation” scenario in which the public consumption of the arts increases, but predominantly opting for “safe”, “feel-good” experiences over challenging work (noting, for example, that the highest-grossing film of all time in the UK was 2008’s *Mamma Mia*). The contrast to this would be an outpouring of artistic anger, a new seam of creativity inspired by difficult social circumstances. There are historical precedents (e.g. recession in the 1970’s and punk music) but little evidence of it at the time of writing (mid 2009). There are optimists who see the recession as a blip and are waiting for the previous good times to return, contrasted by those who are preparing for a new, tougher reality. This latter group will prepare for cuts and invest effort in understanding and respecting their audiences in order to better serve their needs. The implication is that imitating this group would be the wise course of action.

Holden, along with other commentators, notes at the same time a potential change in our culture stating “*we are in the midst of a change in how we view culture and its place in our lives*”<sup>73</sup>. Charlie Leadbetter<sup>74</sup> has categorised people’s engagement with culture in more fundamental way: people want to “*enjoy, talk or do*”, by which he means they want to consume passively, interact socially and increasingly they want to be able to create for themselves. The latter component, the “do”, is the area that the arts will need to adapt to, and which creates potentially the most compelling post-recession scenario. The importance of this change is captured by Holden when he states “*The arts and culture have become central to an increasingly compelling vision of the good life and the good society*”<sup>75</sup>.

---

<sup>72</sup> Holden, John, “The Arts in a Recession”, *After the Crunch (update July 2009)*, Creative & Cultural Skills and the British Council

<sup>73</sup> Holden, John, “The Arts in a Recession”

<sup>74</sup> Leadbetter, Charlie, “Close to Home” *After the Crunch*, April 2009, Creative & Cultural Skills and the British Council

<sup>75</sup> Holden, John, “The Arts in a Recession”

## 5. What lessons from the arts should science centres draw upon?

The preceding sections have explored the analogy between science centres and arts institutions, the history of assessment and value judgements in the arts, institutional differences and similarities and some of the recent evidence of public perceptions of the arts. If we relocate our perspective to the science centre sector, what does any of this mean? Are there any insights from the arts that could be materially useful to science centres, helping them to develop and prosper?

### Quality

As has been touched upon already, science centres do not have a history of debate over the relative merits of intrinsic and instrumental benefits. That terminology, and the concept that impacts could be divided thus, has been absent from the field. Studies of impact have been developed out of the Visitor Studies profession, whose origins lie in a mix of market research and learning research. Individual institutions (and individual projects within those organisations) conduct detailed visitor research to examine the immediate impact of their activities in terms of cognitive learning, attitude and enjoyment. Leaders in the field include national institutions such as the Science Museum. Some longer-term impact studies have been carried out<sup>76</sup> but these have tended to be carried out by learning researchers, and have struggled to distinguish between learning impacts due to science centres and the effects of other activities (including school). The increasing adoption of the MLA's Generic Learning Outcomes framework is an attempt to build a more rounded picture of visitor impact, but as this was primarily developed as an advocacy tool rather than an exhaustive system there are still parts of the picture that are being missed. For example there may be implicit learning outcomes from an experience (e.g. identity construction) that GLOs cannot identify or categorise.

A lesson to draw from the arts world is to look for ways to assess the work itself as well as its impact. While it is unlikely that we will see a cadre of professional science centre critics, there is an absence of external critical assessment of most science centre work, and opportunities to compare practice between centres are few and far between. Most science centre visitors are local, so their expectations can be shaped by a single centre rather than any concept of a wider sector. This was the subject of a debate at the British Interactive Group (BIG) conference in July 2009<sup>77</sup> which fortuitously took place on the day of publication of the BIS commissioned report "Assessing the impact of science centres in England"<sup>78</sup>. There was a general acceptance among the participants of the need for critical judgements, and a recognition that practitioners in science centres can suffer from being "too nice" to one another with the result that the rare opportunities to comment on others' work focus only on the positive. It may be that lessons from the MLA's peer-review pilot are the most directly applicable, although within BIG there has been interest in harnessing social media technology to facilitate sharing and criticism of work in a safe environment.

---

<sup>76</sup> E.g. Gilbert, John K., Stockmayer, Susan & Garnett, Robin, "Mental Modelling in Science and Technology Centres: what are visitors really doing?", conference on 'Learning Science in Informal Contexts', Questacon (The Australian National Science and Technology Centre), 1998

<sup>77</sup> See <http://scicombobulated.com/big09/2009/07/quality.html>

<sup>78</sup> "Assessing the impact of science centres in England", July 2009, Frontier Economics Ltd, London, for the Department for Business, Innovation & Skills

The BIS report looked at the impact of science centres in the context of the government's own agenda for Science and Society. Broadly, the UK government has two objectives against which any STEM (Science, Technology, Engineering and Maths) engagement activity is currently assessed:

1. To increase the number of people who choose to study STEM subjects and work in research and science
2. To strengthen the level of high quality engagement with the public on all major science issues. The ultimate aim is to increase the STEM literacy of the population.

While these appear to be instrumental in nature, concepts like “STEM literacy” are an intrinsic part of the science centre experience. The report set out to compare the value for money of science centres against other STEM activities that are already funded by government (the British Science Association, STEMNET (a national support programme for science teachers), and engagement activities from Research Councils UK and the Royal Academy of Engineering). The main obstacle encountered by the researchers was the lack of consistent data between the comparators, and within the science centre sector, forcing them to rely on what quantitative and qualitative data they could find. They were able to estimate figures to enable comparisons of “*cost per participant*” for the different activities, without necessarily explaining whether this is significant. Within the report's recommendations are requests that the activities already funded by BIS should adopt a common framework for data collection, and a suggestion that science centres should seriously consider adopting the same measures.

If there is a lesson from the experiences in the arts it is that context is everything, and if resources were to be found to enable a serious investigation of impact, a combination of peer review and Social Return on Investment research might produce something that is simultaneously more meaningful while providing an evidence base for future decision-making. It would also address the more critical analysis from the US<sup>79</sup> that any evidence base is weakened by a lack of specificity (i.e. how does THIS work lead to THAT impact) and a failure to consider opportunity costs (i.e. how many of these impacts would have happened in any case). Data collection alone cannot answer these criticisms.

## **Gateway experiences**

The evidence from the US and UK of the importance of early experience on patterns of arts consumption is significant for science centres. The concept of “Gateway experiences” which introduce a new generation to a lifetime of cultural participation is something that many science centre professionals inherently understand but rarely articulate. Science centres have traditionally been thought of as children's venues, and some centres have been actively broadening out their programme to combat this, but it may be that by considering both the gateway effect and the lifelong needs and interests of an engaged audience science centres can better serve an expanded community.

A separate piece of learning research, recently completed in Dundee<sup>80</sup>, examined the factors that impact upon teenagers' choices of study subjects and career aspirations particularly in relation to science. It found that the biggest influence was not school activities or students' peers but the attitude of parents. As with the findings of the Arts Debate<sup>81</sup>, the cultural context of the students in

---

<sup>79</sup> McCarthy, Kevin F., Ondaatje, Elizabeth H., Zakaras, Laura, & Brooks, Arthur, “Gifts of the Muse: Reframing the Debate About the Benefits of the Arts”, 2004, Rand Corporation

<sup>80</sup> Rodrigues, Susan, & Jindal-Snape, Divya, “Consequences of family and friends (social network) influences on pupils' interest in science careers: A Scottish Perspective”, July 2009

<sup>81</sup> Bunting, Catherine, “Public Value and the arts in England: Discussion and conclusions of the arts debate”, November 2007, Arts Council England

Dundee was the best predictor of whether or not they opted for science-based careers. The implication for policy makers is that to achieve the first Science & Society objective related to study and careers, a cultural shift among parents and grandparents may be more critical than interventions targeted at school-age children, suggesting that current data collection may be looking in the wrong place. Do we need to find a science equivalent of Cultural Value to assess the social capital science centres help to build?

## Advocacy

A problem for all cultural institutions in relation to any assessment of quality and impact is being clear on the underlying purpose. Information gathered to improve practice may look very different to information being gathered to inform advocacy for a sector. The weakness of science centres is that the latter category is currently quite weak. Evidence of long term impacts is sparse, and is not helped by the lack of agreement on definitions of “long term” and “impact”. The sub-text of the BIS assessment<sup>82</sup> is that science centres should go away and get their house in order. There is no central government money available in the foreseeable future, and science centres do not yet have a compelling argument should any become available in the future.

The sector should take this as an opportunity. Bodies that currently receive funding are going to see reductions over the next few years as the UK recovers from recession. Science centres have shown that they can survive, and can continue to operate on a lean basis. The next few years will be a time for the sector to think about what it thinks its impacts are (and should be), to find out what its public consumers think and to establish what the sector’s story is about. Are science centres the collective gateway experience for science? Are they a gateway to creative and critical thinking? Are they a pathway to enable citizens to help shape the 21<sup>st</sup> century? Are they providing something that formal education cannot? Are they lobbying organisations, or the communications arm of research science? When a story is identified, what would the evidence for that story look like? Is it something measurable, or is it bound up in value judgements? Do we have adequate language to describe the impacts the sector has?

Almost independently of the story, there is also the fundamental question for each centre (and each practitioner): are we as good at what we do as we could or should be? How can we find out?

The traffic need not all be one way. In “New Flow”, Tim Joss argues for the existence of “COPEA” – a Commission on Public Engagement with the Arts – in a parallel to the now defunct COPUS (the former Committee on Public Understanding of Science). With this thought experiment, he is recognising that that this is currently a serious omission in the arts and that “accessibility” is not enough (it is the arts world’s deficit model). Science centres, as active members of their local cultural sector community, can help their peers in the arts grapple with the implications of full public engagement. Perhaps they can help us in return.

If we doubt the validity of science centres in the cultural sector, reassurance can be found in emerging cultural highlights such as the online presence of conferences such as TED and the World Science festival, which have unselfconsciously mixed art, science and technology under the banner of “ideas” and packaged them for a global audience. As one of the speakers at the 2009 World Science Festival event “Notes & Neurons” stated, “*The brain is the organ of culture*” (<http://www.worldsciencefestival.com/video/notes-neurons-full>).

---

<sup>82</sup> “Assessing the impact of science centres in England”, July 2009, Frontier Economics Ltd, London, for the Department for Business, Innovation & Skills

## Recommendations

In concluding this piece of work there are a number of actions which I believe would help science centres to develop, both individually and as a sector, and to be better prepared for any future discussion on funding.

- Science centres should recognise that they are cultural institutions and build links with their neighbours in the arts.
- The sector should pay more attention to the role of “gateway experiences” and develop their programming for those about to enter, and those already through the gateway.
- Science centre sectoral leaders should give themselves time and space to rethink the “story” to be advocated. Is it really only about education and careers?
- Science centres should be honest about their views on quality, and look for practical methods to collectively improve the quality of the sector. At the very least, a culture of honest criticism between centres is necessary, and consideration might be given to other means of assessment such as peer review.
- The sector should discuss the merits of mechanisms to uncover intrinsic values, such as Cultural Value and Strategic Return on Investment. If any are found to be appropriate, who would be the best agency to conduct such research?

## 6. Bibliography

- “Arts audiences: insight”, August 2008, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- “Assessing the impact of science centres in England”, July 2009, Frontier Economics Ltd, London, for the Department for Business, Innovation & Skills
- “DCMS McMaster Museums Assessment Pilots: Self Assessment Framework”, draft framework September 2008
- “DCMS Museum Peer Review Pilot: Tyne & Wear Museums Self Assessment”, November 2008, DCMS ([www.culture.gov.uk](http://www.culture.gov.uk))
- “DCMS Museum Peer Review Pilot: Tyne & Wear Museums. Tyne & Wear Museums’ Management Team Response”, 2009, DCMS ([www.culture.gov.uk](http://www.culture.gov.uk))
- “DCMS Museum Peer Review Pilot: Tyne & Wear Museums”, 2009, DCMS ([www.culture.gov.uk](http://www.culture.gov.uk))
- “Economic Impact Methodologies for the museums, libraries and archives sector: What works and what doesn’t”, June 2008, Jura Consultants for the MLA Council and MLA South East.
- “How we assess artistic quality”, October 2006, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- “Inspiration, Engagement and Learning: The Value of Science & Discovery Centres in the UK. Working towards a Benchmarking Framework”, 2007, Ecsite-UK, ([www.sciencecentres.org.uk/reports/value-of-science-discovery-centres-in-the-uk.html](http://www.sciencecentres.org.uk/reports/value-of-science-discovery-centres-in-the-uk.html))
- “Learning and social outcomes for museum projects – A planning tool for Tyne & Wear Museums”, 2008, Tyne & Wear Museums
- “Proving Value and Improving Practice: A discussion about Social Return on Investment (SROI)”, May 2009, Museums Libraries and Archives Council and nef consulting
- “The impact of the arts: some research evidence”, May 2004, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- “What people want from the arts”, March 2008, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- Arrow, K., Solow, R., Portney, P.R., Leamer, E.E., Radner, R. & Schuman, H., “Report of the NOAA Panel on Contingent Valuation”, May 2001, NOAA ([www.noaa.org](http://www.noaa.org))
- Bakhshi, Hasan, Freeman, Alan, & Hitchen, Graham, “Measuring Intrinsic Value: How to stop worrying and love economics”, April 2009, Missions Models Money ([www.missionsmodelsmoney.org.uk](http://www.missionsmodelsmoney.org.uk))
- Beetlestone, John G., Johnson, Colin, H., Quin, Melanie & White, Harry (1998) “The Science Center Movement: contexts, practice, next challenges”, Public Understanding of Science 7, 5-26 (IOP Publishing)
- Belfiore, Eleonora, & Bennet, Oliver (2007) “Rethinking the social impacts of the arts”, International Journal of Cultural Policy, 13:2, 135-151 (Routledge)

- Belfiore, Eleonora, & Bennett, Oliver (2007) "Determinants of Impact: Towards a Better Understanding of Encounters with the Arts", *Cultural Trends*, 16:3, 225-275 (Routledge)
- Blaug, Mark, "Where are we now on Cultural Economics?""", 2001, *Journal of Economic Surveys*, 15:2, 123-143 (Blackwell)
- Bodmer, Walter, "The Public Understanding of Science", 1985, Royal Society (London)
- Brown, Alan S., & Novak, Jennifer L., "Assessing the Intrinsic Impacts of a Live Performance", January 2007, WolfBrown
- Bunting, Catherine (2008) "What instrumentalism? A public perception of value", *Cultural Trends*, 17:4, 323-328 (Routledge)
- Bunting, Catherine, "Public Value and the arts in England: Discussion and conclusions of the arts debate", November 2007, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- Bunting, Catherine, Chan, Tak Wing, Goldthorpe, John, Keaney, Emily & Oskala, Anni, "From indifference to enthusiasm: patterns of arts attendance in England", April 2008, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- Bunting, Catherine, Godlieb, Jennifer, Jobson, Michelle, Keaney, Emily, Oskala, Anni, & Skelton, Adrienne, "Informing Change: Taking Part in the arts: survey findings from the first 12 months", May 2007, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- Burch, A., & Gammon, B.M., "The Museum as a social space: Scaffolding the scaffolder", 2007 (accessed at [www.exhibitfiles.org](http://www.exhibitfiles.org), June 2009)
- Burns, Sara & Turton, Deborah, "Distance Travelled: The experience of outcome monitoring within NCVO's Sustainable Funding Project", June 2006, National Council for Voluntary Organisations ([www.ncvo-vol.org.uk](http://www.ncvo-vol.org.uk))
- Calzia, Carolyn, Davidson, Luke, Lorway, Chris & Sidiford, Holly, "Tyne & Wear Museums, Bristol's Museums, Galleries & Archives: Social impact programme assessment", August 2005, AEA Consulting (London)
- Caulton, Tim, "Performance Matters: Measuring the operational success of interactive centres", Paper presented to ECSITE Conference 1997, Brussels, (Museum Intelligence - [www.tcaulton.myzen.co.uk/Publications.html](http://www.tcaulton.myzen.co.uk/Publications.html))
- Chan, Tak Wing, & Goldthorpe, John H., "Is There a Status Order in Contemporary British Society? Evidence from the Occupational Structure of Friendship", *European Sociological Review*, 20:5, 383-401 (Oxford University Press)
- Chan, Tak Wing, & Goldthorpe, John H., "Social Stratification and cultural consumption: The visual arts in England", *Poetics* 35 (2007) 168-190 (Elsevier)
- Chan, Tak Wing, & Oskala, Anni, "Social Stratification of Arts Attendance in England: Evidence from the Taking Part Survey", 2008, presented at the ICCPR08 conference, Istanbul
- Chiaravalloti, Francesco, "A non-prescriptive view of artistic value. A theoretical contribution to the discussion on artistic quality in publicly-funded opera companies", 2008, presented at the ICCPR08 conference, Istanbul
- Clark, Kate, & Maeer, Gareth (2008) "The cultural value of heritage: evidence from the Heritage Lottery Fund", *Cultural Trends*, 17:1, 23-56 (Routledge)

- Coles, Alec, (2008) "Instrumental death of a reductionist", *Cultural Trends*, 17:4, 329-334 (Routledge)
- Collins, Jim, "Good to Great and the Social Sectors" 2006, Random House.
- Davies, Stuart (2008) "Intellectual and political landscape: the instrumentalism debate", *Cultural Trends*, 17:4, 259-265 (Routledge)
- DiMaggio, Paul, "Are art-museum visitors from other people? The relationship between attendance and social and political attitudes in the United States", *Poetics* 24 (1996) 161-180 (Elsevier)
- Durant, John, "A new agenda for the public understanding of science", 1995, inaugural lecture at Imperial College, ([http://ocw.mit.edu/NR/rdonlyres/Science-Technology-and-Society/STS-014Spring-2006/EF04391F-0391-4A5A-8CB4-D40C4D87137E/0/durant\\_newagenda.pdf](http://ocw.mit.edu/NR/rdonlyres/Science-Technology-and-Society/STS-014Spring-2006/EF04391F-0391-4A5A-8CB4-D40C4D87137E/0/durant_newagenda.pdf))
- Eckersley, Susannah (2008) "Supporting Excellence in the Arts: from measurement to judgement", *Cultural Trends*, 17:3, 183-187 (Routledge)
- Eliot, Jake, and Piper, Richard, "Full Value: Public services and the third sector", March 2008, Performance Hub ([www.performancehub.org.uk](http://www.performancehub.org.uk))
- Falk, John H., & Dierking, Lynn D., (2008) "Re-envisioning success in the cultural sector", *Cultural Trends*, 17:4, 233-246 (Routledge)
- Galloway, Susan (2009) "Theory-based evaluation and the social impact of the arts", *Cultural Trends*, 18:2, 125-148 (Routledge)
- Gibson, Lisanne (2008) "In defence of instrumentality", *Cultural Trends*, 17:4, 247-257 (Routledge)
- Gilbert, John K., Stockmayer, Susan & Garnett, Robin, "Mental Modelling in Science and Technology Centres: what are visitors really doing?", presented at the conference on 'Learning Science in Informal Contexts' held at Questacon (The Australian National Science and Technology Centre), Canberra, Australia, August 1998
- Gray, Clive (2007) "Commodification and Instrumentality in cultural policy", *International Journal of Cultural Policy*, 13:2, 203-215 (Routledge)
- Gray, Clive (2008) "Arts Council England and public value: a critical review", *International Journal of Cultural Policy*, 14:2, 209-214
- Gray, Clive (2008) "Instrumental policies: causes, consequences, museums and galleries", *Cultural Trends*, 17:4, 209-222 (Routledge)
- Gregory, Richard L., "Turning minds on to science by hands-on exploration: the nature and potential of the hands-on medium", *Sharing Science: Issues in the development of Interactive Science and Technology Centres*, 1989, Nuffield Foundation
- Hamilton, Andy, "Scruton's Philosophy of Culture: Elitism, Populism and Classic Art", July 2009 (pre-publication draft)
- Hamilton, Andy, "The Art of Criticism: Vindicating an Aesthetic Conception Against Elitism and Populism", July 2009 (pre-publication draft)
- Holden, John, & Jones, Samuel, "Knowledge and Inspiration: the democratic face of culture", August 2006, Demos ([www.demos.co.uk](http://www.demos.co.uk))

- Holden, John, "Capturing Cultural Value: How culture has become a tool of government policy", December 2004, Demos ([www.demos.co.uk](http://www.demos.co.uk))
- Holden, John, "Culture and Learning: Towards a New Agenda", February 2008, Demos ([www.demos.co.uk](http://www.demos.co.uk))
- Holden, John, "Democratic Culture: Opening up the arts to everyone", 2008, Demos ([www.demos.co.uk](http://www.demos.co.uk))
- Holden, John, "The Arts in a Recession", *After the Crunch (update July 2009)*, Creative & Cultural Skills and the British Council ([www.creative-economy.org.uk](http://www.creative-economy.org.uk))
- Hooper-Greenhill, E., Dodd, J., Creaser, C., Sandell, R., Jones, C., Woodham, A., "Inspiration, Identity, Learning: The Value of Museums", September 2007, Research Centre for Museums and Galleries (University of Leicester)
- Jobson, Michelle, "Taking Part: The National Survey of Culture, Leisure and Sport. Headline Findings from the child survey", October 2007, DCMS ([www.culture.gov.uk](http://www.culture.gov.uk))
- Johnson, Peter, & Thomas, Barry, "The Economic Impact of Museums: A Critique", October 2000, University of Durham Business School
- Joss, Tim, "New Flow: A better future for artists, citizens and the state", 2008, Missions Models Money ([www.missionsmodelsmoney.org.uk](http://www.missionsmodelsmoney.org.uk))
- Jowell, Tessa, "Government and the Value of Culture", May 2004, DCMS ([www.culture.gov.uk](http://www.culture.gov.uk))
- Keaney, Emily, "Public Value and the Arts: Literature review", August 2006, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- Lawlor, Ellis, Murray, Richard, Neitzert, Eva, & Sanfilippo, Lisa, "Investing for Social Value: Measuring social return on investment for the Adventure Capital Fund", 2008, nef (the new economics foundation), ([www.neweconomics.org](http://www.neweconomics.org))
- Lawlor, Ellis, Neitzert, Eva, & Nicholls, Jeremy, "Measuring Value: a guide to Social Return on Investment (SROI)" Second Edition, 2008, nef (the new economics foundation), ([www.neweconomics.org](http://www.neweconomics.org))
- Leadbetter, Charlie, "Close to Home" *After the Crunch*, April 2009, Creative & Cultural Skills and the British Council ([www.creative-economy.org.uk](http://www.creative-economy.org.uk))
- Levitt, Ruth (2008) "The political and intellectual landscape of instrumental museum policy", *Cultural Trends*, 17:4, 223-231 (Routledge)
- Levitt, Ruth, & Lowell, Julia F., "Arts debate: Perceptions and impact", 2008, RAND Corporation and Arts Council England ([www.rand.org](http://www.rand.org))
- Lindqvist, Katja, "Managerialisation in the name of democracy: governance structures and management control in the field of public art organisations in Europe", 2008, presented at the ICCPR08 conference, Istanbul
- Mason, Timothy, & Weeks, Jane, "From Australia to Zanzibar: Museum Standards Schemes Overseas. A research project for Resource: The Council for Museums, Archive and Libraries", September 2002, Resource.
- Matarasso, Francois, "Use or Ornament? The social impact of participation in the arts", 1997, Comedia

- McCallie, E., Bell, L., Lohwater, T., Falk, J.H., Lehr, J.L., Lewenstein, B.V., Needham, C., Wiehe, B., "Many Experts, Many Audiences: Public Engagement with Science and Informal Science Education. A CIASE Inquiry Group Report", March 2009, Center for Advancement of Informal Science Education, Washington D.C.
- McCarthy, Kevin F., Ondaatje, Elizabeth H., Zakaras, Laura, & Brooks, Arthur, "Gifts of the Muse: Reframing the Debate About the Benefits of the Arts", 2004, Rand Corporation, Santa Monica ([www.rand.org](http://www.rand.org))
- McDonnell, Bill, & Shellard, Dominic, "Social impact study of UK theatre", July 2006, Arts Council England, ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- McMaster, Brian, "Supporting Excellence in the Arts: From Measurement to Judgement", January 2008, DCMS ([www.culture.gov.uk](http://www.culture.gov.uk))
- Mirza, Munira (ed), "Culture Vultures: Is UK arts policy damaging the arts", 2006, Policy Exchange ([www.policyexchange.org.uk](http://www.policyexchange.org.uk))
- Newman, Andrew, & Selwood, Sara (2008) "Editorial", *Cultural Trends*, 17:4, 207-208 (Routledge)
- Nicholls, Jeremy, "Why measuring and communicating social value can help social enterprises become more competitive", November 2007, Cabinet Office: Office of the Third Sector
- Nicholls, Jeremy, Lawlor, Ellis, Neitzert, Eva, & Goodspeed, Tim, "A guide to Social Return on Investment", April 2009, Cabinet Office: Office of the Third Sector
- O'Neill, Mark (2008) "Museums, professionalism and democracy", *Cultural Trends*, 17:4, 289-307 (Routledge)
- Osborne, Jonathan, & Dillon, Justin, "Science Education in Europe: Critical Reflections", January 2008, Nuffield Foundation ([www.nuffield.com](http://www.nuffield.com))
- Oskala, Anni, Keaney, Emily, Chan, Tak Wing, & Bunting, Catherine, "Encourage children today to build audiences for tomorrow: Evidence from the Taking Part survey on how childhood involvement in the arts affects arts engagement in adulthood", March 2009, Arts Council England ([www.artscouncil.org](http://www.artscouncil.org))
- Pearce, John, and Kay, Alan, "Really Telling Accounts", June 2008, Social Audit Network ([www.socialauditnetwork.org.uk](http://www.socialauditnetwork.org.uk))
- Peterson, Richard A., "Problems in comparative research: The example of omnivorousness", *Poetics* 33 (2005) 257-282 (Elsevier)
- Pinnock, Andrew (2009) "The measure of all things: on the use of time as a value indicator in arts impact assessment", *Cultural Trends*, 18:1, 47-74 (Routledge)
- Rodrigues, Susan, & Jindal-Snape, Divya, "Consequences of family and friends (social network) influences on pupils' interest in science careers: A Scottish Perspective", July 2009 (pre-publication draft)
- Rogers, Rick, "Get It: The Power of Cultural Learning", 2009, Culture and Learning Consortium
- Rumbold, Kate (2008) "The Arts Council England's "Arts Debate"", *Cultural Trends*, 17:3, 189-195 (Routledge)

- Ryan-Collins, Josh, Sanfilippo, Lisa, & Spratt, Stephen, "Unintended Consequences: How the efficiency agenda erodes public services and a new public benefit model to restore them", 2007, nef (the new economics foundation), ([www.neweconomics.org](http://www.neweconomics.org))
- Schmuecker, Katie, "Social Capital in the North East: how do we measure up?", April 2008, ippr north ([www.ippr.org](http://www.ippr.org))
- Selwood, Sara (2002) "The Politics of Data Collection: gathering, analysing and using data about the subsidised cultural sector in England", *Cultural Trends*, 12:47, 13-84 (Routledge)
- Selwood, Sara, "Measuring Culture", December 2002, edited version of paper given at the UNESCO symposium *Statistics in the Wake of Challenges Posed by Cultural Diversity in a Globalisation Context*, Montreal,
- Shellard, Dominic, "Economic impact study of UK theatre", April 2004, Arts Council England ([www.artscouncil.org.uk](http://www.artscouncil.org.uk))
- Shimmin, Sarah, "Challenges to effectiveness and impact", 2007, National Council for Voluntary Organisations ([www.ncvo-vol.org.uk](http://www.ncvo-vol.org.uk))
- Stanziola, Javier (2008) "Developing a model to articulate the impact of museums and galleries: another dead duck in cultural policy research?", *Cultural Trends*, 17:4, 317-321 (Routledge)
- Stligoe, Jack (Ed), "The Road Ahead: Public Dialogue on Science & Technology", 2009, Sciencewise Expert Resource Centre, Department for Business, Innovation & Skills
- Throsby, David, & Withers, Glenn, "What Price Culture?", 1984, published for the Policy and Planning Division of the Australia Council
- Throsby, David, "The Production and Consumption of the Arts: A View of Cultural Economics", *Journal of Economic Literature* Vol. XXXII (March 1994), pp 1-29 (American Economic Association)
- West, Celine, & Smith, Charlotte H.F. (2005) "We are not a government poodle: Museums and social inclusion under New Labour", *International Journal of Cultural Policy*, 11:3, 275-288 (Routledge)
- Wilkinson, Helen (2008) "Conceptualising impact: museums, government and value – irreconcilable differences?", *Cultural Trends*, 17:4, 335-339 (Routledge)
- Winterbotham, Nick, "Museums and Schools: developing services in three English Counties, 1988-2004", PhD thesis, University of Nottingham, 2005
- Wood, Chris, "Museums of the Mind. Mental Health, Emotional Well-being and Museums", 2008, Culture Unlimited ([www.cultureunlimited.org](http://www.cultureunlimited.org))