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**An experimental approach to strengthen the role of science centers  
in the governance of science**

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## **Chapter Ten**

### **An Experimental Approach to Strengthen the Role of Science Centers in the Governance of Science**

**Andrea Bandelli and Elly Konijn**

#### **Science centers and science engagement**

In the last decade there has been a growing interest in Europe concerning the role that science centers and museums play in the governance of science. Science centers, in fact, have the potential to be one of the most effective platforms for the discussions and debates that enable citizens to inform and participate in the democratic development of science.<sup>1</sup> Exhibitions and programs often offer learning opportunities and resources on the ethical, legal and social issues of scientific research in contemporary science and technology. Citizen science programs, science cafés, workshops, discussions and festivals are just a few examples of the wide variety of programs and activities in this direction that have emerged in the field.

Two of the largest museums in Europe, the Science Museum and the Natural History Museum, both in London, went so far as to build whole new facilities for this purpose: the Dana Centre at the Science Museum and Darwin Centre at the Natural History Museum have been established precisely with the goal of creating dialogue opportunities among visitors and between visitors and the scientists, researchers, museum staff and other players in the many fields in which these museums are active.

Many other European science centers and museums include similar activities in their programs and exhibitions; nowadays, it is virtually impossible to find a science center which is not active in the field of science engagement, opening up mechanisms and opportunities for their visitors not only to learn about science and technology, but to “play a role” in the ways science and technology are shaping our society.

Projects funded since the late 1990’s by the European Commission have seen science centers and museums developing a variety of activities to tackle the most important issues and topics in the “science in society” agenda: from gender gap to

responsible research, from climate change to stem cells to nanotechnology. In parallel, significant attention is given to participatory approaches and methodologies for the public engagement with science at meetings for practitioners and scholars in the field, such as the annual Ecsite conference.<sup>2</sup>

Participation and engagement pervade nowadays all aspects and activities of science centers: from the training of museum explainers, who are the first and most important interface between the public and the institution, to the design of new facilities and infrastructure; some institutions, such as the Natural History Museum in Trento, Italy, for example, make participation the core element of their mission, positioning their approach as an “invitation” for the public to engage in the dialogue between science, nature and society.

### **The invisibility of science centers and museums**

However, despite all this activity, the harsh reality is that policy makers engaged in discourse on the governance of science fail to consult science centers and museums; it’s as if these profoundly democratic institutions are somehow “invisible” or irrelevant to those in power. Portuguese Minister for Science, Technology and Higher Education Jose Mariano Gago spoke in these precise terms in his 2007 address to the Ecsite conference.<sup>3</sup>

Science centers and museums are still largely absent from the policy documents and reports that shape and define European policy on science governance. When they are mentioned, science centers and museums are seen as communicators and disseminators of existing knowledge, rather than as instruments that feed back into decision making. Typical is the characterization by the EU Group MASIS (Monitoring Activities of Science in Society in Europe), “Even though they play a minor role compared to schools or the media, they still reach large numbers of diverse people in society, and are supported due to the expectation of their professional approach to the popularization of science and their role as agents for successful dissemination to a broader audience, engaging more citizens in science in the process”.<sup>4</sup> In comparison, science festivals and other ad hoc initiatives are considered more effective and engaging opportunities to anticipate and open up the discussion on the role of science and technology in society and innovation.<sup>5</sup>

There have been, of course, efforts to address this “invisibility”, at least at the European level; for example, Ecsite organized a full day at the European Parliament in February 2009 to present the activities of science centers and museums to the members of Parliament and of the European Commission, and some museums organize formal presentations of the results of their projects to policy makers.

But the real issue is not in raising the profile of museums in the opinion of policy makers, but in deeper self-reflection on the social relevance of the mechanisms and activities that science centers develop and implement. Science centers still have a “fear of engagement” – not of the public with science, which they actually and honestly advocate for – but of themselves with the public. Their role as platforms for dialogue, or, as stated in a declaration signed in Toronto by representatives in the field, of “safe places for difficult conversations”,<sup>6</sup> remains timidly conceptualized and advanced; science centers seem to have no clear strategy yet for defining how civic discourse about science and technology at their institutions could inform and shape the governance and policy making of science.<sup>7</sup>

One of the issues that underpins this situation is the conventional wisdom among many practitioners that science centers and museums are “neutral” places that present science in an objective and balanced way. Among these practitioners, the thought of taking a political stance or an activist role in society is rejected in fear that it would compromise the aura of impartiality that science centers claim for themselves. The factual information presented in museums can certainly be unbiased: but the meaning-making process that characterizes museums depends on many social and personal factors, and it has been argued convincingly by Sharon MacDonald, among others, that science centers, as all museums, do, in fact, carry political meanings in their exhibitions and programs.<sup>8</sup> This idea that the museum should remain “neutral” often becomes a shield to avoid the consequences of the “difficult conversations” that science centers host. These consequences are defined by a much tighter relationship between science centers and policy decision makers. Enzo Lipardi, former president of Ecsite, explains the situation:

We want to show to the European decisions makers that science centers are not only places to visit exhibitions, but instruments to implement policies – European ones in this case. We don’t want to be instruments of political propaganda; but in situations like the European union, which needs to strengthen its concepts of scientific citizenship, a stronger relationship between science centers and policy makers and decision makers could be very beneficial. I think that this relationship isn’t there yet.”<sup>9</sup>

### **Stuck in shallow waters?**

Museums have great potential to facilitate the political engagement of citizens, not in the sense of taking part in “party politics”, but as full participants in the systems that define and shape society. An institution that has taken on this issue at its core is the Science Museum of Minnesota (SMM), which developed a new mission

statement in 2008: *“Turn on the science: realizing the potential of policy makers, educators, and individuals to achieve full civic and economic participation in the world.”* In the past, SMM had minimal interaction with policymakers, limited to seeking biennial funding and hosting occasional events. But, through actualizing this new mission, SMM has become a convener for policymakers in Minnesota; the museum’s work with policymakers has shifted from passive and reactive to proactive and strategic. Consequently, the museum has become a place where policymakers come and do their work. However, at the moment, the SMM is rather an exception to the rule among science museums; it is very rare to find references to social or civic values in the mission statements of science centers and museums, let alone to policy making.

Instead, what is common in the field is a certain ambiguity, or tension, in the social and political role of science centers: on the one hand, they express a strong willingness to be “agents of change”; on the other hand, they fear compromising their assumed impartiality.<sup>10</sup>

In reality what is at risk when this ambiguity is not addressed and understood is not the neutrality of science centers, but rather their relevancy and meaningfulness. Science centers risk becoming stuck in what James Wilsdon, Director of the Science Policy Centre at the UK’s Royal Society, calls “the shallow waters” of science engagement, a situation characterized by a “well-meaning, professionalized and busy field, which never quite impinges on fundamental practices, assumptions and routines.”<sup>11</sup>

Are science centers able to effectively interface with the public concerning policy making? Are museums “safe places for difficult conversations” because they care about the outcomes of these conversations or because the context in which these conversations take place is sterile and adverse to risk (and therefore “safe”, at least from the institution’s point of view)?

The challenge for science centers today is how to balance the social and, to some extent, political agendas necessary to contribute to the democratic development of science, with the requisite humility to become more embedded and relevant in the social structure within which they operate.<sup>12</sup> Rather than providing a role for the public in participatory processes and mechanisms designed from the top, science centers today ought to gain ownership of these processes, becoming part of and contributing to the dynamic governance that sustains knowledge and innovation in our society.

This means they need to investigate the ways in which they can directly support the civic engagement of the public through the activities, programs and exhibitions they produce;<sup>13</sup> it also necessitates the development of an institutional culture which includes the public in the decision-making process and, therefore, the governance, of the museum itself.<sup>14</sup>

We believe that a stronger and more responsible role for the public is necessary if science centers want to leave the “shallow waters” mentioned above – a role that is played as much inside the institution as outside, with activities and programs that effectively enable and empower public engagement with science and technology. While every museum or science center can implement actions and processes to reach these goals on their own, a systemic change can be achieved only if these actions are shared and implemented across the field. We think it is important therefore to identify, discuss and learn from those participatory experiences that easily spread across organizations and foster institutional ownership for the methods they use; experiences characterized by qualities such as replicability, adaptability and “contagiousness”.

#### **“Decide” – an experiment in empowering civic and social action**

In this regard, one of the projects that has gained considerable popularity and widespread attention among European science centers is “Decide - Deliberative Citizens’ Debates.” The project started in 2004 with a grant from the Scientific Advice and Governance unit of the European Commission to better understand the role of science centers in the democratization of science, and it has since then demonstrated how the public can effectively be in charge of the science engagement actions developed by science centers. This role of the public is manifest not only when visitors contribute their knowledge to museum activities, but especially when the public offers the opportunity to increase the relevance and the value of science engagement for policy and governance issues.

It is important to note that “Decide” is a network project rather than an institutional one; the strategy for the project come from a collaborative effort that involves several institutions and organizations, many of which are museums and science centers, but also associations, advocacy groups, and non governmental organizations.

The benefits of this approach are twofold. On the one hand, the collaboration distributes the risk of its activities. Rather than being driven by one institution and its agenda, network projects reside on the “edge” of the institution’s activities; they are often treated as experiments and allow for more flexibility and innovation than

projects that follow an internal development process. On the other hand, network projects allow for continuity in time across different funding sources and institutional commitments. The leadership is shared among the participants and the project adapts itself in response to the opportunities, needs, goals and possibilities of the participants, rather than following a strict strategic line set by one organization and increasingly more often heavily dependent upon a source of funding.

Projects organized like “Decide” function like jazz bands, as opposed to conventional museum structures which operate more like orchestras: all players have crucial roles in both, but while the orchestra plays under the leadership of a conductor, a jazz band shares that leadership and shifts it among its members.

When “Decide”<sup>15</sup> began in 2004, it had three goals: to raise awareness among the public and science center professionals of the potential of participatory and deliberative consultations; to collect data from debates and discussions on contemporary and controversial science issues; and to create an affordable and easy instrument to be made available as a downloadable kit to conduct debates and discussions in science centers.

The New Economics Foundation, an organization based in London, had developed between 2001 and 2003 a card game called “Democs”, which allowed small groups of citizens to conduct discussions and deliberations on controversial topics.<sup>16</sup>

“Democs”, based on visual thinking and participatory methodologies, was very easy to use and it represented a perfect starting point for “Decide”. The partners of “Decide” teamed up with the New Economics Foundation and adapted the original “Democs” game, making it possible to translate the kits and distribute them online.

A “Decide” kit is a PDF file which contains cards and instructions to set up a group discussion for up to eight people. The topic of each kit is of a controversial nature, where there is no easy agreement on the policies to regulate the issues at stake. For instance, the first “Decide” kits developed included topics such as nanotechnology, employing stem cells in research, the criminal liability of people with HIV, climate change, genetic testing and neuroscience. Participants use cards that contain facts, issues and stories to discuss their point of view about a topic. Then, with the same cards, they develop a group response to diverse policies and, if they wish, they can also develop their own alternative policies.

“Decide” encompasses three main phases. In the first phase players clarify their personal position about an issue. By reading the different cards on the table, participants ask themselves questions such as, “What aspects are more interesting to me? Which facts do I already know, and which ones are new? What issues seem



more problematic than others?” This phase is helpful to create a common ground among the participants, to “seed” equal starting points for further discussions among them. Regardless of previous knowledge about the topic, this phase, in the words of one participant, “gives people permission to talk”. It is an effective definition for a very important process, which we could also call empowerment of the public, in the sense that it allows people who might normally avoid a conversation because they think they have nothing to say, to instead meaningfully engage in discourse, bringing their own perspective and experiences to themes that are discussed and shared by the whole group.

The second phase is a group discussion where the participants identify those issues upon which they can converse and deepen their mutual knowledge, focusing on their common concerns, rather than differences. This is the moment when participants consider their personal values in relation to social values in a process of listening and talking that involves the whole group. The cards on the table act as a catalyst to start the discussion; they represent common items of concern for the group. During this phase it is not unusual for the discussion to open up in new directions: for example, during a “Decide” event on the use of stem cells in research, one group’s position was to create a policy that would include biodiversity, and not only human health, as a goal for stem cells research – a radical departure from the usual debate that revolves around the use of stem cells from human embryos or cloning.

The third phase of “Decide” is the deliberative part of the game. On the basis of the discussion, participants arrange the cards used during the game in clusters that represent common areas of concern and interest for the group. A cluster can be, for example, the role played by developing countries in the research field, or alternatives to the proposed research, or its impact on the environment. This process helps the group to reduce the issues that have so far been identified to a manageable number, and it represents an important process in policy making, the fact that at a certain point it is necessary to discard options in order to reach a shared conclusion. After the clustering process, the participants vote on a set of pre-defined policies, and are encouraged to create their own policies if they wish.

Between 2005 and 2006, “Decide” was basically a tool: an instrument by which any organization could set up the process described above. The institutions that organized “Decide” events advertised the activity as a special event for adults, and they usually attracted 20-30 people who registered in advance for the event. In these two years about 300 debates were organized, mostly by science centers in Europe. Most of the time, however, the discussions that it sparked were disconnected from actual policy making. “Decide” was a good way to introduce deliberation; people enjoyed discussing the different topics, but there was obviously a very weak link, if

one at all, between the engagement of the participants with the subject and the relevancy of the discussion in actual, social terms. “Decide”, just as its aims stated, was good at raising awareness for deliberation as a method to present and discuss contemporary science and technology.

Then, starting in 2007, we noticed a radical development.

Several of the users of “Decide” became developers and broadened considerably the purpose for which “Decide” was used. Museums and other organizations began to create their own “Decide” kits to tackle local and pressing issues such as urban garbage disposal or immigrants and social integration, working in collaboration with the local authorities and institutions responsible for those issues. Others adapted and modified the existing kits for use in a local context: for example, homeless shelter organizations in Vienna worked with the Austrian science center network to adapt the HIV kit and used it to “give a voice” to the homeless in regards to HIV/AIDS policy at the shelters. Several schools and universities used “Decide” as a training tool for young researchers to address the social implications of their work. Teachers used them in the classroom with students.

The most significant example of this development is the collaboration that Eurordis, the European network of rare diseases, established with Ecsite to use “Decide” in more than 800 debates across Europe that bring together patients of rare diseases, families, care takers and health providers.<sup>17</sup> The goal is to strengthen the argumentative skills of patients and their families through the debates that take place in museums and other venues in the course of 2010 and 2011, and, at the same time, to shape and inform the policy recommendations and advice that Eurordis and the national patients’ organizations bring to the European Parliament.

Considering these developments, we recognized that a shift was taking place: “Decide” was changing from a project in which museums made available a tool that users could employ for their own purposes, to a process of much more meaningful and relevant civic action that relied on the co-development by users themselves. We also realized the limits of the approach taken so far. The kits were released with a Creative Commons license that allowed free distribution for non-commercial use,<sup>18</sup> but their content was still “protected” by the institutions that developed it: according to the license, users were actually not allowed to modify the kits, in order to protect the validity of the content.

But a review of the many initiatives that evolved from “Decide” made it clear that this was an unfounded fear. The strength of “Decide” lies in the centrality of its purpose: although it is a playful activity, it is a “serious game”; it requires time and

commitment, and encourages participants to develop expectations that their action has been valuable. When it fails (and there have been, of course, instances where players and organizers were both unhappy about “Decide”), it is not because the content is not up to certain standards, but because the institution offering the game does not allow the purpose to emerge, for instance, by not clearly stating what will be done with the results of the discussions and deliberations of the public. The purpose drives the content, not the other way around.

Moreover, the network strategy on which “Decide” relies is built on mutual trust among the participants—institutions and communities; measures to protect the integrity of the game through licensing carry a high risk of diminishing this trust, setting rules that come in conflict with the needs of the users. In a similar way to what happens on the web with sites like Wikipedia, with “Decide” a small community of active developers, loosely connected with each other but trusting their mutual work, create products that are enjoyed by a much larger group of users.

In light of this trend, in 2009 we made three major decisions to steer the development of “Decide” towards greater democracy. The first was to use a more relaxed open source license that allows for modification, distribution and even for commercial derivatives of “Decide”, provided that the source is acknowledged and that the products are released with the same open source license.<sup>19</sup> This gesture, in fact, represents relinquishing the control on “Decide” and sharing it with the public. The rationale is that, in order to sustain the purpose of “Decide” and foster innovation in how the public participate in policy and decision-making about science, we need to open up the epistemological and creative process and allow for unplanned and unanticipated uses and developments of the game.

The second was to create a series of “micro-grants” of about €2,500 each to support users to become “brokers”, allying local organizations, networks and institutions to strengthen the relevance of their activities creating collaborative projects which address broader publics and innovate on the “Decide” format to better suit specific applications. The purpose of the micro-grants is to embed the use of “Decide” in local issues, where participation connects with policy and decision making processes. The micro-grants are catalysts to encourage cost-effective innovation.

The third was to provide training and professional development resources to staff of museums and other organizations using “Decide” in order to internalize a culture of dialogue and participation and start a process of organizational change, aligning institutional internal practices with external actions.

These three actions,<sup>20</sup> combined with the availability in 2010 of an online system that allows anybody to create a full “Decide” kit (integrating the design, layout and editing tools), based on specific needs, are at the moment an experiment for the science centers of Europe to implement a devolved and networked approach to civic action, and to share with their publics the authority they traditionally held for themselves.

### **Radical trust**

These initiatives are happening at the “fringe” of the institutions that participate in “Decide”, and are currently supported by Ecsite, the network organization of science centers in Europe, as an experiment to broaden the role of science centers and museums in science governance. Very often innovative activities like “Decide” can only begin as special or temporary projects involving a limited number of staff and without too much visibility inside and outside the museum. External support is therefore essential at the beginning. This situation, however, helps to avoid many of the institutional barriers to innovation, allowing a risk-taking attitude which eventually becomes integrated within the institution once the results of the project are visible.

The development of “Decide” in the last six years has been driven mostly by listening, observing and reflecting on the actual use that people made of the game, rather than by pushing a certain institutional attitude; and by being flexible when practice conflicted with the initial rules and policies that we established for ourselves (for example, by not enforcing the first and more restrictive license that governed the kits).

Although “Decide” is a specific example that concerns science centers, parallel developments are occurring in other kinds of museums as well. An open source approach that allows users to take social, cultural and educational action, not only using the resources and know-how of the museum, but also sharing ownership of their actions, is already being implemented by collection-based museums. The Powerhouse Museum in Sydney, for instance, released all its collection documentation under Creative Commons licenses<sup>21</sup> and is expanding their photographic collection on the Flickr Commons.<sup>22</sup> The Brooklyn Museum has implemented access to its collection so that anyone can build applications that make use of their data.<sup>23</sup> These are just a few examples of implementations of the open source approach.

This deeply collaborative process requires museums to develop a certain degree of “radical trust”<sup>24</sup> that the public will not abuse this new openness. With this level of

trust the museum effectively empowers the public to take a stronger social and civic role, even beyond the context of the museum; it shares the authority over its content with the public; and it relinquishes part of the control over the meaning and the purpose that museum activities represent for the public (See also Chapter Sixteen). Initially, this relationship concerns a limited part of the museum audience, those who are more committed and acquainted with the museum.

Over time, however, this approach enables museums to enter into networks and collaborations that gradually break down the “fear of engagement” by distributing the risks and by attracting brokers that connect the museum to purposeful and committed audiences and users who do not always overlap with the typical museum audience. The Nanoscale Informal Science Education network,<sup>25</sup> for example, one of the largest initiatives for public engagement with science in the United States, is built on the premise of museums acting as brokers between civil society organizations and the public.

In this context, it is not difficult to see how the social responsibility of the museum means, in fact, becoming comfortable with the concept that the activities and the actions of the public will be meaningful and socially relevant. It means realizing that the museum needs the collaboration of the public in order to achieve its civic and social goals; and that the trust at the basis of this collaboration cannot be established if it is not supported in an integral way throughout the institution. It needs to be implemented not only at the level of the activities, but also in the governance model of the museum, creating clear channels and methods for the public to interact with the decision making process of the museum. This kind of radical trust is not an ambition, willingness or aspiration, but rather the fundamental factor for science centers to achieve social relevance.

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<sup>1</sup> A. A. Einsiedel and E.F. Einsiedel. ‘Museums as agora: Diversifying approaches to engaging publics in research’. In D. Chittenden, G. Farmelo and B. V. Lewenstein (eds.) *Creating connections: Museums and the Public Understanding of Current Research*, Walnut Creek, CA: AltaMira Press, 2004, pp. 73-86.

<sup>2</sup> Ecsite is the European network of science centers and museums. Online. Available HTTP: <http://www.ecsite.eu> (accessed 27 May 2010).

<sup>3</sup> Reported in the Ecsite newsletter n. 74, spring 2008, p. 4. Online. Available HTTP: <http://www.ecsite.eu/wp-content/uploads/2009/06/ecsite-newsletter-74-spring-2008-dialogue.pdf> (accessed 27 May 2010).

<sup>4</sup> “Challenging Futures of Science in Society - Emerging trends and cutting-edge issues” - Report of the MASIS Expert Group setup by the European Commission, Luxembourg, 2009, p. 24. Online.

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Available HTTP: <[http://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/the-masis-report\\_en.pdf](http://ec.europa.eu/research/science-society/document_library/pdf_06/the-masis-report_en.pdf)> (accessed 27 May 2010).

<sup>5</sup> “Challenging Futures of Science in Society - Emerging trends and cutting-edge issues” - Report of the MASIS Expert Group setup by the European Commission, Luxembourg, 2009, p. 24. Online. Available HTTP: <[http://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/the-masis-report\\_en.pdf](http://ec.europa.eu/research/science-society/document_library/pdf_06/the-masis-report_en.pdf)> (accessed 27 May 2010).

<sup>6</sup> As mentioned in the 2008 Toronto Declaration, endorsed by all the science center networks worldwide. Online. Available HTTP:

<https://www.ontariosciencecentre.ca/AboutUs/TorontoDeclaration/> (accessed 27 May 2010).

<sup>7</sup> There are of course exceptions: for instance the advocacy role of the Monterey Bay Aquarium as reported in: “Aquariums as a Force for Change: New Roles in Conservation and Social Impact” by Julie Packard, published in *ASTC Dimensions* September/October 2009 “Taking a Stand: Science Centers and Issues Advocacy”, Washington, D.C. For more on the potential of science museums to impact policy making, see L. Bell (2008) “Engaging the Public in Technology Policy: A New Role for Science Museums”, *Science Communication* 29: 3, p. 386-398.

<sup>8</sup> This discussion can be found in S. Macdonald, ‘Exhibitions of power and powers of exhibitions’. In S. Macdonald (ed.) *The politics of display: Museums, science, culture*, New York: Routledge, 1998, pp. 1, 24.

<sup>9</sup> Personal communication, January 2009.

<sup>10</sup> F. Cameron, ‘Contentiousness and shifting knowledge paradigms: The roles of history and science museums in contemporary societies’, *Museum Management and Curatorship* 20: 3, 2005, pp. 213-233.

<sup>11</sup> “Public Engagement in Science – Report of the Science in Society Session of the Portuguese Presidency Conference “The Future Of Science And Technology In Europe”, Lisbon, 8-10 October 2007”, European Commission, 2008, p. 20. Online. Available HTTP: <[http://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/public-engagement-081002\\_en.pdf](http://ec.europa.eu/research/science-society/document_library/pdf_06/public-engagement-081002_en.pdf)> (accessed 27 May 2010).

<sup>12</sup> E. Koster and J. Falk, ‘Maximizing the external value of museums’, *Curator* 50: 191, 2007. p. 6.

<sup>13</sup> G. Black, ‘Embedding civil engagement in museums’, *Museum Management and Curatorship*, 25: 2, 2010, pp. 129-146.

<sup>14</sup> A. Bandelli, E. Konijn and J. Willems, ‘The need for public participation in the governance of science centers’, *Museum Management and Curatorship*, 24: 2, 2009, pp. 89-104.

<sup>15</sup> “Decide” was originally developed by Ecsite, the European Network of Science Centers and Museums and four science centers: Explore At Bristol in Bristol, UK; Heureka in Vantaa, Finland; La Cité des Science et de l’Industrie in Paris, France; and Città della Scienza - Fondazione IDIS in Naples, Italy. A. Bandelli has been the director of the project since its beginning.

<sup>16</sup> P. Walker and S. Higginson, “So you’re using a card game to make policy recommendations? The evolution of DEMOCS, October 2001–January 2003”, London, New Economics Foundation, 2003.

<sup>17</sup> Online. Available HTTP: <<http://www.eurordis.org/content/polka-patients-consensus-preferred-policy-scenarii-rare-disease>> (accessed 27 May 2010).

<sup>18</sup> Online. Available HTTP: <<http://creativecommons.org/licenses/by-nc-nd/2.5/>> (accessed 27 May 2010).

<sup>19</sup> Online. Available HTTP: <<http://creativecommons.org/licenses/by-sa/3.0/>> (accessed 27 May 2010).

<sup>20</sup> These actions are supported by a grant from the European Commission in the framework of the project “FUND”. Online. Available HTTP: <<http://www.playdecide.eu/about>> (accessed 27 May 2010).

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<sup>21</sup> Online. Available HTTP: <<http://www.powerhousemuseum.com/collection/database/>> (accessed 27 May 2010).

<sup>22</sup> Online. Available HTTP: <<http://www.flickr.com/commons>> (accessed 27 May 2010).

<sup>23</sup> Online. Available HTTP: <<http://www.brooklynmuseum.org/opencollection/api/>> (accessed 27 May 2010).

<sup>24</sup> Online. Available HTTP: <<http://www.ideum.com/2006/08/radical-trust/>> (accessed 27 May 2010).

<sup>25</sup> Online. Available HTTP: <[www.nisenet.org](http://www.nisenet.org)> (accessed 27 May 2010).