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Comment

The Lisbon post-its: how science-in-society issues were reflected in the last ECSITE meetings

Paola Rodari e Matteo Merzagora

ECSITE is the European network of science centres and museums (www.ecsite.net). The ECSITE Annual Conference, attended every year by several hundreds of professionals in science museums and science centres (870 at the last edition), and the ECSITE director forum, where full members of the association discuss on focused topics, are excellent observation points. Looking at what goes on in these meetings allows to track what is high on the agenda of the science-centre community, how the focus of interest moves, what are the main concerns of museum professionals.

Within a commentary on science and society and museums, we hope to do something useful by sketching a survey of how issues concerning science in society were reflected at the 2007 ECSITE annual conference (held in Lisbon from the 29th of May to the 3rd of June, 2007) and in the ECSITE director forum (held at Città della Scienza, Naples, on the 24th and 25th of November, 2006). Topics are diversified: the capacity of dealing with cultural (and physical) differences among the visitors, the mechanisms of engagement of adults in discussions on controversial scientific issues, the challenges of addressing sensitive issues or dealing with social and ethical impact of contemporary science, the role that researchers can play in the museum's floors, the role of animators in stimulating the participation of visitors, the potential of science centres as promoters of social inclusion.

We will leave to the reader (and to the future) to decide whether or not the thread linking all different sessions and presentations in these meetings is a strong one. In other words, whether or not we are witnessing the progressive construction of a body of knowledge at the crossroad between Science and Technology Studies and Museum Studies.

Or, to use a metaphor, to which extent the Lisbon ECSITE conference post-its stick to the Lisbon agenda.

Inclusion and participation

Science centre and museums are supposed to be places for learning as a free-choice activity, not places for teaching in a top-down way. But, are they? In every ECSITE annual meeting many sessions are devoted to discuss the pedagogical approach of informal learning, and to present new researches about the cognitive outputs of the visits. A large number of studies, the majority of which stem from English-speaking countries, are showing that visitor experiences in museums (and therefore learning) depend only partially on the display (and therefore on the curator), while they are influenced by many other factors such as the identity of visitors, their motivation, expectations and previous knowledge and beliefs. But there is more to this: visitors cannot be considered to be isolated individuals, as they are always part of a group which may be present during the visit physically (family, friends, class) or virtually (reference community). The museum experienceis closely connected to what takes place within these groups: learning is the result of group processing, rather than of individual conclusions. Knowing the visitors is essential in order to establish an effective dialogue between museums and their public. Specific projects are targeted to specific groups, from very small children to adults. But specials needs are increasingly taken in account, often through ad hoc projects, as Anna Lindgren-Streicheryle (Senior Researcher/Evaluation Assistant, Museum of Science, Boston, U.S.A.) has illustrated at the ECSITE annual conference, narrating 20 years of experience in including people with disabilities: universally designed computer interface, tactile models for blind visitors, virtual sign language tours for deaf visitors and multisensory/multimodal exhibitions for all learners.

In a Café museologique session, different experts have discussed new ways to engage visitors (convenor Ana Maria Eiró, Director, Museum of Science, University of Lisbon, Lisbon, Portugal). Andrea Bandelli (freelance science centre consultant, Amsterdam, the Netherlands) has advocated for a step forward: there is indeed a lot of effort in collecting the voice of the visitors, but who is listening? Is the voice of the public really integrated in the museum choices and strategies? If engagement with science has to be achieved also moving toward a public participation in the governance of science, museums and science centres should be ready to share authority for what they present to their public. Are they ready for this revolutionary step? Are they read to become Science Centres 2.0?

Even more challenging is to reach the non-visitors. Different kinds of social groups (teenagers, but also minorities, disadvantaged social communities, etc.) are not usual visitors of science centres and museums, and different programmes are proposed to involve them, using the relevance of topics and/or the comfort of special context. Among those, the elderly. As Rob Semper (Exploratorium, San Francisco, U.S.A.) pointed out, these are often very different from the stereotypical image of the fed-in host of hospices using wheel chairs. On the contrary, they are active, dynamic, eager to learn and to teach: a bit like… himself and a good percentage of the people attending the ECSITE conference in just a few years!

Particularly stimulating the contribution of Maya Halevy (Director, Bloomfield science centre, Jerusalem, Israel), who successfully faces the challenge of attracting to her museum in Jerusalem Israelis and Palestinians, including ultra-orthodox Jews and Muslims: a real lesson to all on how science can overcome cultural and religious differences, if cultural differences are well understood by the exhibition developers and by the museum management.

Speak about the unspeakable

A session explored how museums and science centres address sensitive issues. For example, how to speak about puberty and sex to youngsters and teenagers (convenor Maria Xanthoudaki, National Museum of Science and Technology Leonardo da Vinci, Milan, Italy). Maud Gouy (Project Manager, Cité des Sciences et de l'Industrie, Paris, France) presented a new exhibition organized in five topics: Falling in love; Puberty; Having sex; Making a baby; Watch out!. These are all intimate and taboo questions that 9 to 13 years old ask themselves. A complex study involving psychologists and sociologists has been carried out in order to plan an exhibition that illustrates in a scientific, clear and open style all aspects of sex, allowing visitors to be intimate and isolated when particular topics are presented, while being immersed in a humorous and joyful atmosphere elsewhere. A famous French cartoon character has been chosen for representing youngsters: curious, upset, embarrassed, clumsy. Another temporary exhibition about sex, but with an "older" target (teenagers), was presented by Diana Issidorides (Science Centre NEMO, Amsterdam, Netherlands). In "TeenFacts" an electronic device given to all visitors allows different ages to access different exhibits, so that the older are not disturbed by their parents or younger kids, and vice versa.

Sara Calcagnini (Education and Learning Officer, National Museum of Science and Technology Leonardo da Vinci, Milan, Italy) and Giovanni Crupi (Head of Marketing and Fundraising, National Museum of Science and Technology Leonardo da Vinci, Milan, Italy) presented the programme 'Fatti un'opinione' ("Make up your mind"), aimed at involving adult citizens in discussions and debates on delicate issues (like illnesses) with the help of a facilitator and in the presence of experts. In the Milan experience, hands-on activities are used to empower the public and push it to participate and make questions to the experts during public debates.

Controversial issues and participatory procedures

"Fatti un'opinione" is a good example of new participatory events that are being organized in many museums and science centres: from café scientifiques to role palying to participatory formats based on consensus conferences or scenario workshops are tested all around Europe and outside Europe. The topics treated are usually controversial issues, either within the scientific community (open questions

discussed between scientists), and/or because of their potential consequences on everyday life, and/oror because of their ethical implications.

Sally Duensing (visiting professor, King's College London, London, U.K.) coordinated a discussion on outputs of participatory events held in science centres and museums. Panellists have spoken about some key issues and research findings with regards to (1) the type of talk and engagement occurring; (2) the perception scientists have of the public and the impact of its participation; and (3) design and facilitation issues and needs. Roland Schaer (Director, Sciences et Société, La Cité des Sciences et de l'Industrie, Paris, France) has discussed the question of legitimacy and competence: Do science centres and museums have to acquire legitimacy and competence in the field of "public debate engineering", especially when these "science in society debates" are linked with political decisions? What does this sort of competence involve? In such contexts, the issue of the engagement of scientists and practitioners acquires a special relief, because of the decisions at stake.

Elin Simonsson (visitor researcher, Science Museum, London, U.K.) proposed the experience of the Dana Centre, a space of the Science Museum, London devoted to host science cafés and debates for adults only. Evaluation of these experiences suggests that it is often challenging to actively engage people, as there are many barriers impairing dialogue and active participation.

Alexandre Quintanilha, (Director, Instituto de Biologia Molecular e Celular, University of Porto, Portugal) covened a session dedicated to "Communicating risk". Societal risks appear to be an increasingly prominent feature of debates about science and technology. The aim of this session was to discuss recent researches on the way people think about scientific issues and risk. The aim was to identify issues in the 'public understanding of risk' that may offer new ideas as to how risks associated with science and technology can be successfully communicated to the public. Other sessions were dedicated to sustainable development, global warming and nanotechnologies.

Engaging citizens in the dialogue on social and ethical issues: the example of nanotechnologies and nanosciences

Andrea Bandelli (Freelance science centre consultant, Amsterdam, The Netherlands) convened a session in which some of the most significant projects on nanotechnology in science centres were presented. All the projects involved new methodologies to inform and engage the public; dialogue-based activities, games, exhibits and media have been reviewed and discussed, looking in particular at how social and ethical issues are embedded in the communication strategies, and at how scientists and researchers can collaborate with museums and science centres.

Rob Semper (Exploratorium, San Francisco, U.S.A. – NISE network, Boston, U.S.A.) has presented "The Nanoscale Informal Science Education Network", a coalition of U.S. museums and research organizations, supported by the U.S. National Science Foundation, aimed at building the capacity of museums and research centres to work together to educate, inform, and engage public audiences in a dialogue about the emerging nanosciences and their potential impacts on science, technology, and society. The subject matter is challenging and the process of creating a functioning, sustainable network of collaborating institutions is complex.

Marcelo Knobel (Executive Director, State University of Campinas, Campinas, Brazil) has illustrated the project "NanoAdventure" (www.mc.unicamp.br/nanoaventur), a travelling exhibition aimed to reach primarily students, to present fundamental notions in nanosciences and nanotechnologies.

The exhibition offers a multimedia experience that attracts and stimulates future learning experiences and, eventually, influences future professional choices.

Paul Hix (Deutsches Museum, Munich, Germany) has presented a novel approach to public understanding of science by effectively combining nano-research and nanocommunication: the "Open Research Laboratory" in the Deutsches Museum, where visitors can observe under the classical glass cases of the museum… a full laboratory at work, from routine preliminary preparation to actual experimental investigations with a scanning tunnelling microscope. Guglielmo Maglio (Science & Society Projects, Fondazione Idis- Città della Scienza, Naples, Italy) has illustrated Nanodialogue (www.nanodialogue.org), an innovative EU-funded project for science centres to present and talk about nanotechnology. A small exhibition module serves as a catalyst for meetings, discussion, debates, presentations and games around nanotechnology. The open format of the project allows fruitful

collaborations with industries and universities, and its flexibility allows it to be adapted to many different settings – from shopping centres to schools, and naturally science centres.

Touch the scientists

The direct involvement of scientists in science communication events is more and more common, particularly in the largest natural history museums, where much valuable research is often carried out, but where the scientific research departments and the education departments have been separated for years, and have started to work together again only recently.

Not only has the Natural History Museum in London opened a new venue, the Darwin Centre, where the "backstage" collections and laboratories can be visited with the help of curators. A programme for the involvement of researchers in science communication public events has also been set up. Helen Penny (Nature Live Manager, Natural History Museum, London, UK) has presented "Nature Live": over 100 research scientists and curators from the museum take part in the programme each year, meeting the museum visitors in a TV setting, presenting their research, answering questions fromthe public of the museum but also of a distant public, who can attend the meetings at home through the Internet.

The programme "Meetings at the Frontiers of Science", that Oshrit Navon (The Davidson Institute of Science Education, Weizmann Institute of Science, Rehovot, Israel) and Zahava Scherz (Director of Science and Education Communication, The Davidson Institute of Science Education, Weizmann Institute of Science, Rehovot, Israel) have illustrated, is intended for the general public, and comprises 10 series of 8 lectures about state of the art scientific research. The main goal is to introduce science to the public at large as an attractive and accessible part of human culture. The lecturers are researchers and scientists presenting interdisciplinary scientific topics by giving examples taken from everyday life. The series attract a variety of audiences from 9 to 90 years old.

New web-based programmes where pupils are connected to researchers at a university where presented by Sten Ljungström (Scientific Director, Universeum AB, Gothenburg, Sweden). With "Discover with Universeum" pupils learn about the most recent scientific advances and results in a certain topic directly with the person who performs the research. They also make their own investigations at home and get feedback and new ideas from the researchers.

If researchers cannot always been present on the museum floor, another group of people is in constant interaction with the public: the explainers, animators, facilitators, pilots, often young scientists during their training. A session organised by the authors of this paper dealt with "Human interfaces in science centres: an implementation tool for the dialogue model?": that is, how can explainers become crucial actors in establishing two-way interactions with the public on controversial scientific issues? Nine different experiences were presented, reactions and priority of the audience were collected and followed by an audience-led discussion.

Dialogue at the Directors forum

The 2006 ECSITE director Forum topic was clearly oriented to issues regarding science in society: "Science centers and museums and society: In need for dialogue". The issue was developed by breaking it up in two subtopic: "Responding to the dialogue model" and "Exploring whether science centres and museums can be tools of social inclusion".

As for the first topic, Matteo Merzagora (ICS – SISSA, Trieste, Italy) presented the DOTIK project (www.dotik.eu) and the idea that governance and citizen participation in scientific issues requires the construction of a more widespread cultural fabric, on which specific participatory events can proliferate, and that explainers (pilots, animators, etc.) in science centres and museums can play a very important role: indeed, they interact daily with a great number of visitors, totalling tens of millions of "dialogues" every day. Frank Burnet (UWE, Bristol, U.K.) tried to give a more articulated definition of the concept of "dialogue", assuming that a real dialogue occurs only if you are able to take into account the instances of all parties: in other words, if the opinions of the public expressed in science centres and museums can be brought to the ears of decision makers. Massimiano Bucchi (University of Trento and Observa) outlined the shift form a"science and society" to a "science in society" perspective.

The second question was even more challenging: can museums be a tool for social inclusion? It is now more and more accepted that this should not be considered just a “side role” for science museums, but it is today at the very core of their mission. Several presentations demonstrated this in practice: but beside the specific cases, it seems very relevant that the topic was raised directly in a discussion involving high level museum professionals and officers of the European commission dealing with issues related to science in society.

Social inclusion, as a key element that allows citizen participation in science to go beyond rhetorical statements, needs to be ranked high on the agenda of future museums.