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Comment

The role of science centres and museums in the dialogue between science and society

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In a meta-analysis carried out in 2002, the two main associations of science centres and museums (ASTC, mainly US-centered, and ECSITE, mainly European) gathered all studies analysing the impact of science centres and museums on their local communities[1]. Four types of impact were identified: personal, social, political and economical. It was noticed that the vast majority of studies concentrated on the personal impact (that is, learning outcome, visitor satisfaction, etc.), while the latter three were largely neglected. The very fact of pointing this out, and many recent experiences - some of which are included in this commentary - show that there is now a shift of attention. The social role of science centres and museums is considered more and more important, and greater attention is devoted to the many ways in which museums interact with other social actors: from the natural ones, such as the school system and research institutions, to the less obvious, such as local or national authorities, the tourism industry, business and industrial communities, the labour market, the consumers' association, environmental agencies or associations, media, etc.

Indeed, the role of science centres and museums (we prefer not to make distinctions between the two types of institutions, concentrating on their common features rather than on their differences, which nowadays are less and less clear) as a link between the scientific community and society at large has undergone a profound evolution. From places devoted to the *production*, *conservation* and *enhancement* of scientific knowledge, they have evolved in the last two centuries to become also places of *representation* of that knowledge and of the community producing it, and then places of *mediation* between that community and society at large. More recently, they tend to interpret a new role: that of *negotiation* of the scientific knowledge.[2] In other words, they have become places were scientific development and social instances can meet and face each other, where the process of incarnation of scientific achievements in the social body can be observed and the awareness of the implication of such process can be enhanced, from the side of the scientists, of the direct stakeholders, and of society at large.

Museums and science centres have clearly understood that in the post-academic era of science not only is the impact of science and technology on everyday life continuously increasing, but also the interferences of political, economical and ethical issues on the construction of scientific knowledge have become unavoidable. In this new world citizens require more scientific information, and science museums have been and are professional and sophisticated media for a good science communication. But citizens are also requested to express their feeling and opinions, and even to contribute with their "end-user", non-expert knowledge to important decisions on the agenda of scientific and technological development. For this reason, new methodologies and new contexts for debates and exchanges between experts and non-experts are required.

The museums continue to be the best candidates for hosting this dialogue: neutral, reliable, trustworthy, familiar, science centre and museums offer themselves as mediators in science and society dialogue and arenas for different kind of encounters.

> *Science centres have an increasingly strong social role. As cultural institutions, they exhibit an increasingly strong role enhancing the processes of democratic governance and of awareness of the importance of science and technology on society;. As territorial agencies, they increasingly accompany and represent projects of urban transformation and territorial marketing, acting as aggregation poles, as a stimulus and a support to the school system, as a place of life-long education and of informal learning, etc.*[3]

With respect to other media, museums have two obvious peculiarities: they are *physically* located in a territory, and they *physically* include the visitors. They are therefore the best candidates to become territorial agencies on one sides, places of construction of a scientific citizenship on the other.

The declination of these elements in concrete terms (that is, directly observable in contemporary science centres and museum) has many, sometimes very different, facets. Among these:[4]

- the increasing attention to ongoing, open and "unfinished" (and thus intrinsically controversial) science, rather than to well established knowledge;
- the increasing attention to the ethical and social implication of scientific research;
- the increasing attention to the diversity of the visitors, which reflects the diversity of the society in which the museum operates. This encompasses the attention to specific age groups, to ethnic minorities, to the physically impaired, etc., as well as the ability of taking into account cultural, socio-economic, religious differences, etc.
- the capacity and the willingness to link the museum activities with the labour market;
- the capacity and the willingness of interpreting the territory, not only in terms of its heritage or environmental characteristics, but also in terms of the economical specificities and innovation capacities of the regions in which the museum is located;
- the attempt of presenting museums as social venues open to debates, where citizens' concerns are taken into account;
- …

The role of museums in the science and society dialogue occurs necessarily at the crossroad of these and many other elements. Some of them are discussed in the contributions to this *Jcom* commentary; others are discussed in an ever growing number of meetings, conferences and common projects dedicated to the topic.

We believe that one of the main challenges for the future will be the capacity of *integrating* these and other pathways: "linking with the labour market" cannot be separated from "taking into account cultural differences"; "dialogue" cannot be separated from the above and - most importantly - from "understanding contemporary science", and so on. Failing this integration would mean failing to keep science communication in museums up to date with a fast-evolving science on one side, and with an even faster society on the other. The more promising route is an "engagement 2.0" attitude where, as in the so called "web 2.0", user generated content becomes a key element of the communication and of the agenda setting for the museums.[5] Indeed, "empowering people" was already one of the main objectives of Frank Oppenheimer and its Exploratorium back in 1969: "If people feel they understand the world around them, or even if the have the conviction that they *could* understand it if they wanted to, then and only then are they also able to feel that they can make a difference through their decisions and activities".[6]

Notes and references

[1] R. Garnet, *The impact of Science Centres /Museums on their surrounding communities*, ASTC, 2002 <www.astc.org/resource/case/Impact_Study02.pdf>

[2] M. Merzagora and P. Rodari, *La scienza in mostra. Musei, science centre e comunicazione*, Bruno Mondadori (2007).

[3] L. Amodio, *Scienza, tecnologia e società in Europa: quale ruolo per i science centre?* In: Pitrelli e Sturloni, *La comunicazione della scienza. Atti del I e II convegno nazionale*, Zadig Roma (2004).
Si veda anche L. Amodio, A. Buffardi e L. Savonardo, *La cultura interattiva*, Oxiana edizioni, Pomigliano d'Arco (2005).

[4] An extremely valuable collection of texts about this range of topics can be found in D. Chittenden, G. Farmelo and B.V. Lewenstein (eds), *Creating Connections: Museums and the Public Understanding of Current Research*, Altamira Press, Walnut Creek (2004).

[5] M. Merzagora, "Engagement 2.0", presentation at EUPRIO 2007 conference, Grenoble, 18-19 June 2007.
We thank Andrea Bandelli for very valuable insights and discussions on this topic.

[6] F.Oppenheimer, quoted in *Dedication to Understanding*, in *The Exploratorium*, Special issue, March 1985.