Science communication in science centres and museums: Return to their core business

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Introduction

Both in my previous life as practitioner in the field, and in academic and professional meetings I have noticed there is a growing feeling that sector of Science Centres and Museums is entering a crisis regarding their identity. This is certainly triggered by the increasing need to attract audiences who have an ever wider range of choices to spend their time and money in. However, responses and attempts to address this crisis do not always seem driven by principles stemming from an understanding of what Science Centres really are and the "language" they master. In order not to break they bend with the winds that blow... but are those winds blowing in the right direction?

Science centres and trends to follow

In the 90s, when many Science Centres were being created and the financial climate allowed –or invited– to spend vast amounts of money without much thinking through, one naïve option many went for was to focus on new technologies and getting the latest gadgets built into exhibits that often lacked any other design principle. And even those that did, became obsolete within months, when visitors carried in their pockets more advanced gadgets than those in the exhibition. We were blinded then by the ICT boom, but in hindsight it seems obvious that such technologies needed to be at the service of a wider science communication concept in order to fulfil a role rather than be the attraction themselves. Notable exceptions are centres devoted to showcase the technologies in their own right, such as *Futuroscope* in France, but this only works under a very high budget to keep up with the pace at which technology advances and with very strong sponsorship from the manufacturers.

Less obvious and perhaps even surprising for many is the inclusion here of another trend that lies in the very essence of Science Centres. What we call interactivity or hands-on became the guiding principle for any new science centre or exhibition – if it is not hands-on, it has no place there. "It's forbidden not to touch" was the new motto. The result were exhibitions where visitors had to push buttons everywhere – buttons that ticked the box of interactivity, but often were nothing more than triggers for lights to blink or mechanisms to work – not quite what we would expect under the principle of interactivity. Visitors would walk around pushing every button without much thought and often without even waiting for the effect to take place.

While learning by doing is indeed a solid educational principle, it cannot be applied to everything indiscriminately, and there are objects, ideas and stories that do not need or do not lend themselves to manipulative interaction. In fact, as suggested by Jorge

Wagensberg (Terrades Arquitectos and Wagenseberg, 2006) apart from, and perhaps more important than hands-on interactivity, there are the minds-on and hearts-on interactions between visitors and exhibitions.

On the other hand, funding agencies have tried to follow the strong trend towards dialogical science communication or public engagement, and therefore many science centres felt a strong need to tick that box in order to remain eligible for their funding. Unfortunately, as explored in Owen and Stengler (2015), exhibitions do not seem to be the ideal environment for dialogue, in its "true" sense of a dialogue between society and science that informs the policy and governance of science. Science centres end up needing to organise numerous parallel activities aside from their exhibitions in order to begin to fulfil the dialogue remit, gradually drifting into becoming organisers of events for which an exhibition is not necessary in the first place. As parallel activities are also a good source of revenue, even more so when they are toured or delivered to order in venues other than the science centre itself, many science centres have become very professional event or activity organisers, perhaps neglecting, or at the expense of their exhibitions.

Another source of trends to follow is naturally public demand. Science centres have thus detected that there is a demand for venues where children can be entertained while parents either go shopping on their own or at least have a break to sit down and have a coffee. The problem with this approach in a science centre is that the easiest way to entertain is by having the children have fun, so science centres become "fun" places, and it lies close to end up identifying science with fun. Many science centres have whole sections called "Fun Science", and, particularly in North America, science centres are identified and even called "children's museums". Such an identification of science with "fun" carries various risks as explored in Stengler, Lyons and Fernández (2013), ranging from discouraging scientists to get involved in science communication to misleading[1] young people into thinking that a good reason to enrol in a scientific career is that "science is fun". Science can be many things, such as exciting, fascinating, important, enjoyable, but not necessarily fun all the time. This sends out the wrong message about science, but also about children, assuming they will only engage with things that are fun; or even about school, identifying science and the science centre with "fun", in contrast to science in school, which is "boring". At the same time a focus on fun has shown no evidence of improving engagement with science among primary and secondary students (DeWitt, J., Archer, L. and Osborne, J, 2014). But worst of all in terms of science education, a focus on fun displaces enquiry based learning from science centres, which are an ideal environment for it (Murmann and Avraamidou, 2014).

Final remarks

We therefore propose a return to science centres' "core business", namely exhibitions and the museographic language in order to make them find again their unique selling point of telling stories about science my means of exhibitions. In this area science

[1] Ironically, the word for "fun" in Spanish is "diversión", and it serves to highlight that excessive emphasis on fun may "divert" from useful science education and science communication.

centres and museums can excel and provide visitors with a unique experience that can not be found anywhere else.

References

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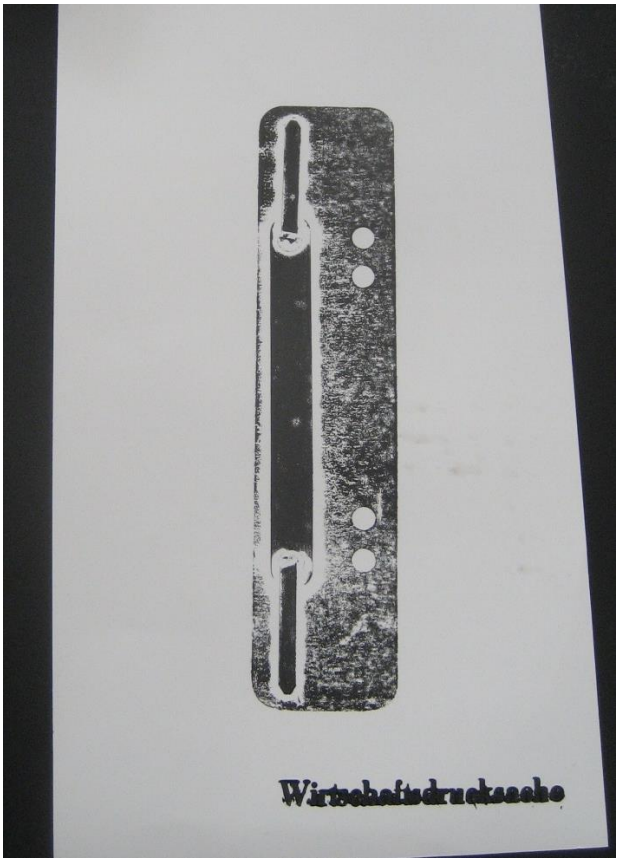

Empirical print (see page 51 for further information).