

## **Critical exhibits and public engagement: challenges and possibilities**

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### **Abstract**

Recently, informal educational settings such as museums and science centres have witnessed increased attention to current issues in science and technology (S&T). In an effort to explore ways to enhance visitors' involvement and engagement, some institutions have attempted to develop contemporary installations with all the social and political trappings of the day, moving from pedagogical and experiential exhibitions to critical exhibits (Pedretti, 2002). In this paper, we refer to a larger research project that focuses on a series of individual case studies of critical exhibitions housed at institutions across Canada. The results and discussion we present here focus on one case related to the travelling exhibit *Body Worlds and the Story of the Heart*, and represents only one of a series of exhibitions to be explored. In this case, semi-structured interviews with museum staff and visitors, observation of visitors' interaction with the exhibit and

collection of relevant documents were used to build up a portrait of the nature and impact of the case. Relevant findings highlight emergent categories related to the meaning the visitors ascribe to their interactions with the exhibit and the tensions experiences by them.

## **Introduction**

Science and technology (S&T) have become pervasive features of our lives. Along with their undeniable benefits, advances in S&T have also given rise to a number of controversial issues that affect our environment, and overall well-being. These issues (e.g. reproductive technologies and genetically modified foods) can be controversial in the academic community and in society because they have no easy solutions. They involve science but often also include potentially conflicting political, ethical and socio-cultural dimensions and viewpoints.

In tandem with the increase in importance of S&T, the notion of scientific literacy has become significant to discussions about the aims and purposes of science education in formal and informal settings. The increased attention to complex S&T issues has made the calls for scientific literacy more urgent and resulted in various responses from the informal sector. One example is the movement Public Understanding of Science (PUS). Early advocates of this movement explained that science education needed to be more pervasive, encompassing out of school settings (The Royal Society, 1985). Science centres and museums, scientists, media and SciTech industries have expanded efforts to communicate and engage the public in S&T. Among those efforts, museums and science centres have increasingly attempted to develop *critical exhibits* (Pedretti, 2002). Those exhibits invite visitors to explore the nature of science, especially the intersections across science and society through engagement with social, political, economic, and historical forces in which science is embedded, and highlight the interdisciplinary nature of the subject matter.

In this context, the purpose of our research is to inquire into the work of science centres and museums through individual case studies of critical exhibitions that reflect complex S&T issues, and to explore the interface between these exhibits and visitor engagement. Specific research questions for each case include: 1) How do visitors engage

with, and make meaning of critical exhibits? 2) What theories of communication are reflected or embedded in these exhibitions?

### **Theoretical Framework**

This proposal is informed by research in the areas of scientific literacy and science communication. Broadly speaking, calls for scientific literacy advocate a science education for all— and include acquiring and developing conceptual and theoretical knowledge, developing expertise in scientific inquiry and problem solving, and developing an understanding of the complex interactions among Science Technology Society and Environment (STSE) (Hodson, 1998). Even though scientific literacy is a desirable goal, this notion has been supported by disparate meanings that range from basic understanding of facts and concepts, to more elaborate and complex visions that are claimed for citizen science (Roth & Calabrese Barton, 2004), citizen action (Roberts, 2007) and socio-political engagement (Hodson, 2003).

*Critical exhibitions* (Pedretti, 2002, 2004) are a good example for understanding scientific literacy in more complex ways. Those exhibitions often explore controversial STSE issues and provide a useful context for: (1) contesting the status quo and the ways S&T issues are constructed through debates and controversies within the scientific community (Mazda, 2004); (2) engaging with scientists in new ways (Durant, 2004); (3) raising awareness of the political, economic and environmental angles of current scientific debates (Mazda, 2004); (4) challenging the visitors' point of view (Pedretti, 2004); and (5) constructing more equitable relations between the exhibitor(s) and the visitors (Durant, 2004).

Critical exhibits also pose interesting questions about the ways in which science centres and museums communicate science to the public. According to Bucchi (2008), stable scientific topics can more easily fit the 'deficit box' model and the idea of transferring knowledge, through a one-way communication process. On the contrary, controversial topics are more likely to allow for other forms of public communication to emerge. The 'deficit box' Bucchi (2008) often referred to as the 'deficit model', is a well-established model in discussions of science communication and the work of PUS. More recent discussions have challenged this top-down passive approach - and have offered

instead more iterative and participatory models that call for: (1) science in context and public as an inquiring expert (Einsiedel & Einsiedel, 2004); (2) social empowerment for making decisions about S&T issues that affect society (Lewenstein, 2003); and (3) consultation, negotiation, knowledge co-production, social responsibility and civic science (Bucchi, 2008). The theoretical support provided by those discussions can help us to contextualize the shifts in the museum world in terms of a more active role related to public engagement, critical thinking and continuing dialogue about complex STSE issues, current research and controversies.

### **Methodology**

We propose a multiple case study methodology (Yin, 1984) to investigate the interface between critical exhibits and visitor engagement. This methodology provides deep insight into a particular phenomenon in several contexts and is commonly used to study the nature and impact of museum exhibits (e.g. Bradburne, 1997; Jagger, Dubek, & Pedretti, 2012; Livingstone, Pedretti, & Soren, 2001; Molella & Stevens, 1996). The main criteria for choosing our cases include the following: exhibitions should be framed around controversial STSE issues and they should be ‘important’, that is, have a relatively high attendance rate and/or high media visibility in Canada (i.e. *A Question of Truth* - Ontario Science Centre, *Body Worlds* - Gunther von Hagen and *Renewable Energies: Time to Decide* - Canada Science and Technology Museum, Ottawa).

### **The Case Study Context: *Body Worlds* Exhibition**

For the purposes of this paper, we selected the case study of the travelling exhibit *Body Worlds and the Story of the Heart* created by the German anatomist Gunther von Hagens. This exhibit has been traveling worldwide since 2006 and it was open to the public between 2009 and 2010 in the Ontario Science Centre. This exhibit displays the human body in intense detail through a process of plastination (Body Worlds, 2014) in which body fluids are replaced by synthetic, allowing human cadavers to be preserved and displayed. The only information provided, beyond the bodies, are images and quotes written by philosophers, poets, authors, etc. These texts provide an interesting juxtaposition to the stark bodies, and speak to themes of love, and the heart.

## **Methods**

Data collection occurred through semi-structured open-ended interviews with museum visitors and staff, observations and field notes of visitors' interactions with the exhibit and visitors' written comments. In regard to analytic methods, inductive-deductive strategies (Patton, 2002), and qualitative content analysis (Elo & Kynga, 2008; Hsieh & Shannon, 2005) were used to interact with data in order to build understandings around the relations between museum exhibitions, visitor meaning-making and theories of science communication.

## **Results and Discussion**

In an effort to explore visitor responses and visitors' patterns of meaning making and engagement with the exhibit, we use the lenses provided by theories of science communication as an organizer for our findings.

If we consider the engagement continuum suggested by Einsidel and Einsiedel (2004) for museum activities, the exhibit *Body Worlds*, at first glance, can be viewed as rather 'passive'. It is an exhibit that reminds us of more 'traditional' museum practices inspired by the notions of collection of objects in cases, non-interactive displays (Pedretti, 2012) and temples (Cameron, 1971). However, we argue that deeper dimensions of engagement, such as dialogue and participation (Bucchi, 2008; Einsiedel & Einsiedel, 2004; Lewenstein 2003) are created by visitors through their personal narratives (which are often emotionally charged), and their actions. Hence, for the purposes of this paper we will focus on the *dialogic* and *participatory* dimensions established between the exhibit and the visitors.

### **Dialogue: Personal Stories**

*Personal narratives and stories* provided refreshing opportunities for engagement. Those stories could be defined as "shared, spoken stories that are often private and draw on previous experiences, identity and life events" (Jagger, Dubek & Pedretti, 2012, p. 363). Some of them were autobiographical and family-related, as the quotes below illustrate:

*It astonishes me how little people know about the human body. When my father was dying, I went and the doctors were explaining what was going on, and I had to explain to my mother, and I started to realize that she didn't really have a grasp of the internal organs. (Female, 61 years old, illustrator and scientific artist, Interview)*

*Thank you. It was hard but good to see what my babies looked like when they died inside me. It kind of gives me the closure I've been looking for for years (Book 1, p.85).*

As discussed in an earlier paper by Pedretti (2012, 2013), in *Body Worlds* there was little controversy with the message, and little epistemological debate generated. However, the medium/objects (plastinates) raised some ethical tensions for visitors. We noticed that those tensions provoked dissonance and *inner dialogues* among visitors:

*It [the sick body] kind of turned me off, actually. I kind of went through it quicker after I started seeing all the diseased ones because 'ah, this is depressing, kind of'. Because, obviously, people in their lives know people who have been sick. I know a lot of people who are sick. I know that they are sick. I don't want to be reminded of it. Do I want to see a sick lung, or liver, or something? No. I didn't come for that purpose. (Female, 40-49, driver in the TTC, visited the exhibit with friends, Interview).*

*Emotional responses* create a different kind of engagement pattern between the visitors and the exhibit. Some of them hinted at a disturbing dimension:

*I wasn't expecting to see anything to do with fetuses... I saw that sort of little vignette, they have a little side area, which was very intriguing actually...I sort of went around a corner and thought 'oh, there's something else here. I'm going in the wrong direction. So, I popped in and said 'oh, okay' and it just took me back, because it was just... I just didn't expect it to be part [of the exhibit] (Male, 50-59 years old, graphic designer, Interview).*

Visitor narratives, provoked by the critical nature of the artifacts and the messages they raised, open up possibilities for establishing a kind of dialogue in which different voices (with their multiplicity of cultural, social, aesthetic and ethical values) can be heard and shared.

### **Participation: Changing Habits and Actions**

For this study, participation is defined in terms of visitors as *inquiring experts* (Einsiedel & Einsiedel, 2004) and, also, in terms of the social empowerment needed for making decisions around S&T issues and taking action (Lewenstein, 2003). In this case, we observed, for example, that visitors engaged in discussions about taking care of their own body, particularly, improving or changing habits. Some people focused on personal change:

*It just felt really interesting... to really make you think about how we should abuse our bodies and we should treat them a lot better. Last year, I lost, personally, 91 pounds [...] Wow! A lot of that's gone, not all. I still have some to go. And then I go, "Ewww [sic], just look at the parts and how we should respect our parts more and keep them working and clean and so on, through our lives".* (Female, 45y, working in corporate communication, Interview)

Other visitors went further in terms of actions that might involve others:

*[...] when I did look at the lungs I was like 'oh, thank God I quit smoking'. I said to my friend, who's a smoker, 'make sure you look at the lungs'. It is kind of creepy...* (Female, 40-49, driver in the TTC, visited the exhibit with friends, Interview).

Of course, we cannot comment on the extent to which changes are actually made. This would require long-term follow up with visitors. However, what is interesting is that the exhibition has prompted visitors to report that they need to make changes in their lives.

### **Future Directions**

Based on those preliminary findings, we will study other cases of controversial exhibitions across Canada in order to more fully explore, the emergent dimensions of engagement we referred to in this paper: dialogue and participation. A cross-case analysis based on the portrait of each exhibit will also provide deeper understandings around the processes of meaning-making and patterns of engagement established between S&T controversial exhibits and the public.

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