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CULTURAL ASSUMPTIONS AND SOCIAL INTERACTIONS IN MUSEUMS

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INTRODUCTION

Over the past 40 years there has been a widespread international development of science centers and museums. Ranging from tiny store-fronts to large national centers, it is estimated that there are now more than 460 science centers or museums world-wide that are visited by 95 million people annually (ASCT, 2011). Exhibits can range from heavily guided experiences about single ideas to more open-ended approaches offering opportunities for people to explore multiple things and to raise their own questions and investigations.

This essay focuses on culturally based assumptions about learning and play that are embedded in science museum exhibits and program design in various international venues. These assumptions reflect conscious and unconscious cultural values and perspectives derived from international museum practice, as well as from national and local cultural contexts that influence the form and content of their presentations (Alexander, 2000; Karp & Lavine, 1991; Rogoff, 2012).

ADAPTATIONS AS A CULTURAL LENS

My interest in the underlying cultural assumptions and practices that are incorporated into science centers design and practice originated with my work at the Exploratorium in San Francisco, California, a recognized leader and resource in the field of informal science learning through its highly interactive exhibits and programs. For more than 20 years much of my work involved assisting museums and science centers throughout the US and other countries that wanted to develop exhibits and programs based on ideas from the Exploratorium. In working with these different science centers I began to notice that museums would make changes in exhibit design or the use of floor staff that reflect some of the cultural assumptions and priorities (Duensing, 2000).

DESIGN ADAPTATIONS

For example, a simple design change at the Museo de los Niños in Caracas, Venezuela, was to add bright colors to their versions of Exploratorium exhibits that are in more neutral tones in San Francisco. The Venezuelan staff creating this new children's museum felt that colorful rather than muted toned exhibits would more effectively attract and interest children because it would reflect the emphasis of bright colors in the Venezuelan culture.

Sometimes the title of an exhibit would be changed to more directly relate to a particular community. For example, an Exploratorium exhibit on stereovision and eye rivalry is called *Cheshire Cat*, since in the exhibit, part of someone's face seems to disappear much like the cat in *Alice in Wonderland*. Thinking that many visitors would not be familiar with this Lewis Carroll story in Caracas, the title was changed to a descriptive title, *Borrale la Cara* (*Erase the Face*). And interestingly in Paris, France, being the home of the guillotine, it is called *Moins La Tete* (*Minus the Head*).

SOCIAL BY DESIGN

Another category of adaptations were those made to encourage

specific kinds of social interaction, in addition to interaction with the object or phenomena of an exhibit. Most science museum staff would readily acknowledge that museums are social environments (Borun, 1999; McLean & Pollack, 2007), however, there is a notable variation in the degree and forms of social interaction that are explicitly or implicitly encouraged through the design of exhibits and the museum environment.

For example, education and design staff at the children's museum in Mexico City, *Papalote*, said that they modified ideas from the Exploratorium and other US museums to be slightly larger, and to have more space around each exhibit. They said that family groups visiting their museum would on average be larger than those in San Francisco. They wanted to make sure the design would allow these visiting groups to watch and interact with each other at the individual exhibits.

At the Espaço Ciencia Viva located in a small working class area in Rio de Janeiro, Brazil, the exhibits were redesigned to be more like activity tables at which museum staff would talk and work with the visitors. The staff in Rio felt that, to effectively reach their public, the highly social culture of Brazil should be reflected in the format of the exhibits.

In the National Science Centre of Trinidad and Tobago, the overall arrangement of the public floor space itself is an expression of social emphasis. At least half of the entire public floor space is devoted to group activity programs that include demonstrations, project making areas, a computer activity area and a group planetarium. The Trinidad staff said that the demonstrations and other activities were the most interesting areas for the visitors, and that it was during the activities and social interaction that visitors became engaged with ideas.

Although valued in the US and Europe, the socially oriented group interactions at exhibits are generally thought of as secondary enhancements to the exhibits, not a central design component. Christian Heath and Dirk vom Lehn's research studies on visitor interaction in UK science museums, for example, found that social interaction does not appear to be considered in the design of many exhibits they studied. They observed that the "interaction" often created independent rather than inter-dependent activities and that a common form of social engagement was a my-turn-your-turn form of interaction with little cooperation or co-participation between visitors (Heath & vom Lehn, 2008; vom Lehn, Heath & Hindsmarsh, 2001).

SOCIAL LEARNING AND MEDIATION

Floor staff

The use of museum floor staff to facilitate learning and interaction in exhibit areas also embodies social and cultural assumptions. For example, in contrast to having one facilitator for every three to five exhibits, as in Brazil and Trinidad, US science centers commonly have one staff person for every 15 to 25 exhibits. Although floor staff in Trinidad are considered by exhibit and program planning staff as integral as the exhibits in their informal science learning environment, some science

centers in other countries have said that they do not see the need for floor staff at all.

The Exploratorium's use of floor staff (named Explainers) was adapted from a practice in the Palais de Decouverte museum in Paris. At the Palais, the floor staff are graduate students in science or practicing scientists. Wearing white coats, they conduct structured demonstrations in specified areas in the exhibit galleries. At the Exploratorium, by contrast, the floor staff are high-school students wearing orange vests. They generally interact in less structured ways with the visitors. The Palais staff felt that the Exploratorium approach would not work in Paris, and that the French visitors would want more information than the Americans and thus would need scientists or graduate level students on the floor to assist them.

This assumption was tested when an Exploratorium teenage high-school Explainer spent a summer working as an Explainer at the Palais de la Decouverte. In contrast to the Palais staff's assumptions, she found no apparent difference in the amount or level of information that the Paris visitors wanted as compared to San Francisco. However, an unexpected difference did emerge in how the visitors would interact with her. In San Francisco the Explainers say that it is rare to have visitors approach them. Most of the time, the Explainers have to approach the visitors to offer assistance and explanations. At the Palais it was the exact opposite. The Explainer said that she was never left alone. People constantly approached her for information and help. (She said that at times she got so tired she would hide.) There was also a noticeable difference in interactions she would have with families. In San Francisco, the parents most often would want the Explainer to tell them the information about the exhibit and they then would tell their children. In Paris, parents would often push their children towards the Explainer and say something like, "Please tell my daughter how this light exhibit works" (Duensing, 1993).

TINKERING

Other cultural assumptions can be seen in a recent trend of providing tinkering or make-it spaces in science museums. In these areas, tools and supplies are given that enable visitors to work creatively to make various objects or explore the materials themselves. In a training session in, Italy, some staff members felt that the staff needed to play a greater guidance and authority role than was being modeled by Exploratorium staff, saying that parents and teachers would expect this for their children.

The amount of guidance needed also applies to the design of exhibits. Across institutions as well as within institutions there are frequent debates on how open-ended or limited the focus of particular exhibits should be. For example, in a language exhibit at the Exploratorium, *Reaching for Meaning*, there was staff disagreement about emphasizing first that the exhibit was about teaching grammar over encouraging visitors first to see what personal random meanings emerge from words they select.

QUESTIONING, SOCIAL EXPLORING, AND LEARNING SCIENCE

A final and crucial consideration here is the basic understanding of what learning and specifically science learning should be about. In the above examples of the roles of French and American Explainers, there are underlying assumptions about the values of curiosity and playing with ideas versus getting facts in the process of a scientific inquiry. How to teach science in any given museum may tilt one way or another towards emphasizing what's known or more open-ended discovery processes.

In addition, social exploring can be related to the growing body of learning research that is looking at the value and role of social interactions in science learning. Zhang et al. described the creation of knowledge as a social product, something that scientists, scholars, and employees of highly innovative companies do for a living (Zhang et al., 2009).

Increasingly, learning is being viewed from a sociocultural perspective, which recognizes the impact of others on the way learners construct meaning (Leinhardt, Crowley & Knutson, 2002). People are seen to "construct meaning not only from the interplay of what they newly encounter and what they already know, but also from interaction with others" (Alexander, 2004).

SUMMARY

Variations in museum design practice can be linked to unspoken "rules" or "grammars" of interaction that vary across cultural communities in somewhat systematic ways as described by Rogoff in her article *Learning without Lessons* (Rogoff, 2012). Awareness of some of the variations and how staff and visitors reflect and perpetuate certain cultural norms in their thought and actions can empower individuals and institutions to more consciously and thoughtfully respond to the diverse communities.

Instead of trying to find the 'One Best Way' or treating distinct approaches as mutually exclusive, we argue for the value of expanding everyone's repertoires of practice by learning to do things more than one way (Gutiérrez & Rogoff, 2003).
This, of course, is a culturally based idea.

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